

DEPARTMENT OF INDUSTRIAL RELATIONS
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 13 and 14, 2022
In-Person – Sacramento, CA
Videoconference – Zoom

1. Call to Order.

The videoconference and in-person meeting was called to order by the Chair, Maryrose Chan, Senior Safety Engineer, Occupational Safety and Health Standards Board (Board or OSHSB), at 9:30 am on Thursday and Friday, October 13-14, 2022, in Sacramento, CA. Maryrose Chan, Senior Safety Engineer introduced herself as the new committee Chairperson, taking over Elisa Koski's duties. The Chair was assisted by Bernie Osburn, Associate Governmental Program Analyst, OSHSB. Turn-Key Operations Communications assisted with managing the videoconference participation.

2. Opening Remarks.

The Chair welcomed members of the advisory committee meeting to the second meeting on Walking-Working Surfaces (WWS). The topic for the meeting is to discuss the amendments to the General Industry Safety Orders (GISO), Article 2 and Fall Protection. The first meeting was held on February 12 and 13, 2020, on Fixed Ladders.

The proposed amendments were due to Fed-OSHA issuing a final rule on Walking-Working Surfaces and Personal Protective Equipment [PPE] (Fall Protection), which was effective on January 17, 2017, and a follow-up rulemaking called Walking-Working Surfaces, Personal Protective Equipment (Fall Protection Systems), and Special Industries (Electrical Power Generation, Transmission, and Distribution); Corrections, which was effective December 17, 2019.

The federal rule prompted a review to ensure that the title 8 regulations are as effective as the federal standard. As a result, there are proposed amendments to GISO and cross-references to GISO affecting other industries, such as electrical, elevator, agriculture, telecommunications, maritime, petroleum, logging and construction.

The federal final rule includes rules to address fall hazards, which are the second leading cause of fatalities at work, second only to traffic related accidents. Fed-OSHA described the nature of the risk using various statistics including those below. The

statistics cited in the federal rulemaking are now outdated, hence OSHSB provided the committee the latest statistics on falls.

Table II-1. Fatal Falls to a Lower Level – General Industry

Year	Fatal Falls to a Lower Level
2006	283
2007	279
2008	234
2009	237
2010	243
2011	278
2012	270

Statistics from Federal Final Rule

The Bureau of Labor Statistics published a News Release dated December 16, 2021.

Information below was from Table 2. Fatal occupational injuries for selected events or exposure, 2016-2020.

	2016	2017	2018	2019	2020
Falls, slips, trips	849	887	791	880	805
Construction*	388	389	340	418	N/A
Other Industries*	461	498	451	462	N/A
Same level	134	151	154	146	136
Lower level	697	713	615	711	645
• Collapsing structure or equipment	65	48	50	37	36
• Surface or existing	87	85	83	95	63

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<https://www.bls.gov/news.release/pdf/cfoi.pdf>

*Red texts were deduced using data below.

Nationwide, at least one-third of fatalities from the construction industry were due to falls.

Event	2015	2016	2017	2018	2019
All construction fatalities	985	1034	1013	1038	1102
All falls, slips, trips	367	388	389	340	418
Percentage of fatalities*	37.3%	37.5%	38.4%	32.8%	37.9%
Falls to lower level	353	372	367	321	401
Same level falls and trips	14	16	22	19	17

<https://www.bls.gov/opub/ted/2021/fatal-and-nonfatal-falls-slips-and-trips-in-the-construction-industry.htm>
(visited October 04, 2022).

* The Chair's calculations are in red text.

In California, fatalities from falls, trips and slip were:

Event	2016	2017	2018	2019	2020
Falls, Trips, and Slips	64*	82	73	88*	99
Management	3	5	3	3	6
Service occupations	7	22	15	25	22
Protective Service Occupations	N/A	N/A	N/A	8	N/A
Building, grounds cleaning and maintenance	6	17	14	15	18

Sales and office occupations	N/A	4	6	N/A	5
Natural resources, construction, and maintenance occupations	36	42	40	41	46
Farming, fishing, and forestry	3	3	N/A	N/A	4
Construction and extraction occupations	22	34	33	31	36
Installation, maintenance and repair	11	5	5	8	6
Production, transportation, and material moving occupations	17	9	9	3	13

<https://www.bls.gov/iif/state-data.htm#CA>

*The numbers in the subcategory do not necessarily add up to the category.

In California, the worker's compensation claims due to falls were:

Falls or Slip Injury	2015	2016	2017	2018	2019	2020
From Different Level (Elevation)	10,145	10,211	10,574	10,438	10,550	8,026
From Ladder or Scaffolding	6,004	6,188	6,554	6,518	6,549	5,348
From Liquid or Grease Spills	7,405	7,779	8,201	8,801	9,136	5,670
Into Openings	1,631	1,658	1,777	1,925	1,869	1,324
On Ice or Snow	947	961	1,109	1,025	1,403	749
On Same Level	26,382	27,918	28,761	28,543	29,890	21,504

On Stairs	6,162	6,304	6,915	7,163	7,244	4,748
Slip, or Trip, Did Not Fall	5,305	5,282	5,814	5,680	5,574	4,270
Fall, Slip, Trip, NOC	31,884	33,992	35,990	37,756	38,467	27,648
SUBTOTAL	95,865	100,293	105,695	107,849	110,682	79,287

https://www.dir.ca.gov/dwc/wcis/WCIS_tables/Tables1-3/WCIS_Reports-Table1-3.html

* Run Date: April 21, 2021

The updated statistics are from Table 2a of the Annual Aggregate Type of Injury Reports:

Table 2a: Claim by Causes of Injury (Detailed) and Year of Injury, 2010-2021*

Falls or Slip Injury	2016	2017	2018	2019	2020	2021
From Different Level (Elevation)	10,271	10,652	10,561	10,709	8,221	9,227
From Ladder or Scaffolding	6,222	6,577	6,604	6,666	5,449	5,620
From Liquid or Grease Spills	7,795	8,212	8,854	9,241	5,765	6,741
Into Openings	1,663	1,783	1,949	1,893	1,341	1,498
On Ice or Snow	965	1,119	1,026	1,422	764	932
On Same Level	28,106	28,915	29,014	30,535	22,150	26,120
On Stairs	6,337	6,937	7,228	7,323	4,838	5,823
Slip, or Trip, Did Not Fall	5,330	5,855	5,718	5,621	4,346	5,049
Fall, Slip, Trip, NOC	34,093	36,174	37,497	38,167	28,140	33,457
SUBTOTAL	100,782	106,224	108,451	111,577	81,014	94,467

https://www.dir.ca.gov/dwc/wcis/WCIS_tables/Tables1-3/WCIS_Reports-Table1-3.html

*Run Date May 12, 2022

The Chair discussed the differences between Type 1 and Type 2 helmets. Although the proposal does not mandate the use of Type 2 helmets, under existing section 3380(f), the employer is required to conduct a hazard assessment to select the appropriate PPE. During a fall, the employee may hit their head on surfaces and if the helmet comes off during the fall, then the worker does not have head protection.

ANSI [American National Standards Institute] Z89.1 Standard for Industrial Head Protection

Type I	Type II
Reduce the force of impact resulting from a blow only to the top of the head	Reduce the force of impact from a blow to the top, or sides of the head
Testing for Flammability, Force Transmission, Apex Penetration	Testing for Flammability, Force Transmission, Apex Penetration
N/A	Impact Energy Attenuation, Off-center Penetration, Chin Strap Retention

The Chair cited two studies to support the need for proper head protection.

Konda S, Tiesman HM, Reichard AA. Fatal Traumatic Brain Injuries in the Construction Industry, 2003-2010. Am J Ind Med. 2016 Mar;59(3):212-20. doi: 10.1002/ajim.22557. Epub 2016 Jan 4. PMID: 26765167

- From 2003 to 2010, 2,210 fatal traumatic brain injuries [TBIs] occurred in construction at a rate of 2.6 per 100,000 full-time equivalent (FTE) workers.
- Workers aged 65 years and older had the highest fatal TBI rates among all workers (7.9 per 100,000 FTE workers).
- Falls were the most frequent injury event (n = 1,269, 57%). Structural iron and steel workers and roofers had the highest fatal TBI rate per 100,000 FTE workers (13.7 and 11.2, respectively). Fall-related TBIs were the leading cause of death in these occupations.

Kim SC, Ro YS, Shin SD, Kim JY. Preventive Effects of Safety Helmets on Traumatic Brain Injury after Work-Related Falls. Int J Environ Res Public Health. 2016 Oct 29;13(11):1063. doi: 10.3390/ijerph13111063. PMID: 27801877; PMCID: PMC5129273.

Conclusion:

A safety helmet is associated with prevention of intracranial injury resulting from work-related falls and the effect is preserved within 4 m (13 feet) height of fall. Development of safer helmet regulations for wearing safety helmets might be interventions for protecting against fall-related TBI in the workplace. Effective prevention strategy including providing enough fall protection PPE (safety belt, harness and lifeline) to prevent a worker from falling and safety training/education about fall protection for workers is necessary for both employers and employees in workplace.

3. Summary and Discussion of the Proposed Rulemaking.

Section 2940.6. Tools and Protective Equipment

The Chair explained that the proposal has a cross-reference to GISO section 3210.1 regarding personal fall protection. There is also a similar update to section 2320.8. Fall Protection. Before the proposed change in section 2940.6 can be addressed or finalized, the proposed new section 3210.1 would have to be discussed first.

Section 3207. Definitions

This section was skipped. The proposal contains highlighted terms which are found in this definition section. Reviewing the definitions as they come up provides context on how the term was used in the regulation.

Section 3209. Standard Guardrails and Toeboards.

Proposed Subsection (a)

The proposal added “a” at the beginning of existing paragraph. The definition of the highlighted term “walking-working surfaces” was reviewed. The term is used in multiple instances throughout title 8 standards.

Proposed Subsection (b), Discussion on the Note

Existing subsection (a) was renumbered to subsection (b).

Greg Lawson (Cotterman Co) commented about the guardrail height requirement of 42 to 45 inches and a Note, which states a one-inch tolerance. He said that the one-inch tolerance may be confusing, because there is a range plus a one-inch tolerance. It appears in a few subsections.

In response to Mr. Lawson’s comments, the Chair asked that the Note be deleted. The Chair also mentioned that the one-inch tolerance was moved to other subsections (b)(1) and (b)(1)(A).

Mike Donlon (Construction Employers' Association) asked how the proposed amendments will affect existing installations. He was concerned that existing guardrails will not meet the height requirements without the one-inch tolerance.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) asked if the more critical issue is the opening versus the height of the surface of the guardrail. The midrail should be located halfway between the opening created by the top-rail and the walking working surface. In subsection (b)(1)(C), it talks about vertical openings.

Mike Donlon (Construction Employers' Association) was also concerned that existing midrails may not be in compliance with proposed subsection (b)(1)(A).

The Chair asked if there was an objection to removing "within one-inch tolerance from proposed subsection (b)(1)(A)," which was existing language.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) stated that his understanding of Mr. Donlon's point was about grandfathering existing guardrails.

In response, **Jason Denning** (Cal/OSHA) stated that there is an exception for existing buildings under section 3202(c).

Rinaldo Edmonson (Marathon Petroleum) asked a follow-up question about how the amendments will affect guardrails for non-buildings.

Jason Denning (Cal/OSHA) responded that section 3202(b) would apply.

Jason Moore (CS Caulkins) stated that the midrail has the one-inch tolerance in proposed (b)(1)(A), but it would be missing for the top rail. If the one-inch allowance is removed from the top rail height, then that affects the halfway distance.

Yancy Yap (Cal/OSHA) proposed to keep the within one-inch tolerance because approximately halfway is open to interpretation.

Robert Armstrong (PG&E) stated that he approached Cal/OSHA before regarding the interpretation of the one-inch tolerance. Per Cal/OSHA, the guardrails can fluctuate one inch in the 42-45 inch range, so you can have something like a wave.

Mike Donlon (Construction Employers' Association) stated that the reason was to allow something that is not rigid or something that has some sag to be used as a guardrail, provided that it is within 42-45 inches. He changed his prior comment and stated that the Note in subsection (b) be deleted and subsection (b)(1)(A) as proposed to remain.

Jason Moore (CS Caulkins Co. Inc.) stated that the proposal does not have the same one-inch tolerance as midrails, screens, mesh, etc. in proposed subsection (b)(1).

Robert Moutrie (Cal-Chamber) stated that the existing Note should not be deleted so that the one-inch tolerance applies to both top-rail and mid-rail.

In response to Robert Moutrie, the Chair restored the Note.

George Lawson (Cotterman Company) stated that leaving the tolerance section with the range of 42-45 inches will create a never ending issue of misunderstanding. If you really wanted to allow for that tightness, then the range of what is allowable should be changed.

The Chair displayed the figure associated with the guardrail requirements and stated the dimensions of 42-45 inches will not change in order to be as effective as the federal standard. [*Correction: The federal standard requires 42 inches +/- 3 inches.*] The Chair asked the committee to develop language for the Note.

Mitch Steiger (CRLAF) commented that as members review the proposal, it would be helpful to know what changes are being grandfathered.

The Chair responded that the initial proposal was to improve readability by separating existing subsection (a) and breaking up requirements into other subsections. There was no proposed change in the Note.

The committee decided to revisit the issue regarding the Note at a later time.

Robert Moutrie (Cal Chamber) stated that figure section 3209-1 should have language regarding the one-inch tolerance so that the proposed text and the figure are consistent.

Action Item: *The Chair was going to research the origins of the Note. An e-mail was sent to members on 12/13/2022 regarding the Note.*

Proposed Subsection (b)(1)(A)-(b)(1)(D)

Chuck Wigger (Lamar Advertising Co) asked if screens and mesh are required

The Chair responded that if you have screens and mesh then they must meet the requirements of subsection (b)(1)(B).

Chuck Wigger (Lamar Advertising Co) suggested that subsection (b)(1)(B) start with an "If statement."

Mike Donlon (Construction Employers' Association) responded that it was not necessary to add an "if statement," because the concerns were captured in subsection (b)(1) "midrails, screens, mesh . . . or equivalent[.]" If (b)(1)(B) is amended, then you would have to make changes throughout all the subsections.

Mike Donlon suggested to amend proposed subsection (b)(1) by adding "may be used as midrail protection. Where used they shall meet the following requirements" and deleting the rest of the sentence.

"Midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent intermediate members **may be used as midrail protection. Where used they shall meet the following requirements** shall be installed approximately halfway (within 1 inch tolerance) between the top rail and the walking working surface when there is not a wall or parapet that is at least 21 inches high"

He also proposed to add subsection (b)(1)(D) stating: "A parapet shall be at least 21 inches high"

Robert Moutrie (Cal Chamber) stated that a comma needs to be added after "Where used"

Jason Moore (CS Caulkins) suggested adding "parapets" after the words "solid panels"

Matt Kuzemchak (Fed OSHA) stated the use of word "may" might be perceived as the midrail be considered as optional. As a result, the word "may" was replaced by "shall"

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) stated that use of "midrail" at the beginning of the sentence and the phrase "shall be used as midrail protection" is redundant.

Proposed Subsection (c)

Matt Smylie (Ford Construction) suggested that "two" be amended to "2"

Proposed Subsection (c)(1)

No comments

Proposed Subsection (c)(2)

No comments

Proposed Subsection (c)(3), Ballasted Guardrails

The Chair stated that subsection (c)(3) is not from the federal final rule but is being proposed because in the field there has been issues with ballasted guardrails.

Mike Donlon (Construction Employers' Association) objects to the proposal to require that ballasted guardrails be secured to the structure, because it removes the usefulness of having ballasted guards. The idea of ballasted guards is that they are temporary guardrails that can be put in place to protect employees while work is being performed. The problem is they are probably not being installed following manufacturer's instructions, not that they do not work. Ballasted guardrails installation requires a straight rail with at least one 90-degree section, and that is probably not being installed. Ballasted guardrails have been proven to work.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that ballasted guardrails are useful and do not have a penetrating member, which prevents a potential for roof leaks. It is a great option to include ballasted guardrail, but there is a need to come up with better language to clarify how it can stay put without being required to be secured to the structure. There are ballasted guardrails that can withstand a hurricane winds.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) stated that the purpose of ballasted guardrails is to be used in situations where guardrails cannot be secured to the structure for some reason. For example, use of ballasted guardrails is a useful option for temporary openings where you do not have to attach it or to bolt it in place.

The Chair stated that there is a Canadian Standards Association (CSA) standard regarding ballasted guardrails. The problem is that they are not being installed properly and a testing method is needed.

Jason Denning (Cal/OSHA) stated from field experience, even when installed per manufacturer's requirements, sometimes the manufacturer's instructions are not adequate. Surface friction on which they are installed vary and other conditions, such as weather conditions, may affect the surfaces. There are instances where they slide easily with less than 200 pounds force.

Matt Smylie (Ford Construction) commented that Cal/OSHA can still cite the employer for not meeting the 200 pounds requirement, so adding (c)(3) is superfluous.

Mike Donlon (Construction Employers' Association) stated that per the Labor Code, "necessity" is needed and there must be data to show need for subsection (c)(3).

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated the field conditions and environmental conditions can affect the stability of the friction and ballasted guardrails.

Mitch Steiger [inaudible]

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that the manufacturer instruction may state that the installation requires a certain coefficient of friction.

Yancy Yap (Cal/OSHA) stated that if friction or counterweighted guardrail systems is included in the standard, then language should be added to state that it doesn't create a trip hazard.

The committee members felt that there are existing orders regarding walking surfaces that address trip hazards.

The Chair shared CSA Z259, which will be proposed to be incorporated by reference if ballasted guardrails are permitted.

Larry McCune (Cal/OSHA) commented that the incorporation of the CSA standard is outside the scope.

The Chair responded to Larry McCune that in the rulemaking documents, she would have to explain that the testing requirements for ballasted guardrails was not in the Federal Final Rule.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) stated that incorporating documents by reference limits the access to the regulation because the document incorporated by reference becomes the regulation. There are persons who will not have access to the consensus standards. He is aware that there are some ANSI standards, but only portions of the document are incorporated. If the document is brought wholesale, then there is no input from the committee on how it was written.

Matt Smylie (Ford Construction) stated that the static test in Section 7 would not meet requirements of subsection (c) because of the displacement distance.

The Chair replied that the new testing requirement would be specific to ballasted guardrails. There must be testing and performance requirements. The Chair is proposing that the CSA standard is incorporated by reference or ballasted guardrails must be secured to the structure. *Currently there is no ANSI standard that addresses this issue.*

Mike Donlon (Construction Employers' Association) stated that the State permits the use of a variety of equipment provided that the employer follows manufacturer's instructions. The ballasted guardrails should be used in accordance with manufacturer's instructions. If there is a problem, then it is on the manufacturer, not on the employer. Manufacturers spend a lot of money on product safety and liability insurance.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) echoed those comments and added that the proposal already has the strength and testing requirements for guardrails. He does not understand why the Chair is insisting on another standard for ballasted guardrails.

The Chair stated OSHSB staff can accept or reject the recommendation of the committee, but the members' comments will be taken into consideration. The Chair stated that she will give it further consideration, review manufacturer's instruction, and talk to the people who developed the ballasted guardrail standard.

River Blough (Swinerton) stated that there are worksites where a structural member cannot be penetrated. If ballasted guardrails cannot be used then, the only recourse would be to use fall protection.

Mike Donlon (Construction Employers' Association) suggested that the Chair review the manufacturer's instructions.

Dan Leacox (Leacox & Associates) stated the members should consider if the performance and testing built into the rules is sufficient. If there is a non-conforming product out there, it would be grounds for a lawsuit for Cal/OSHA against the manufacturer and it's also a liability.

Matt Smylie (Ford Construction) commented that it is possible that Canada wanted to create the standard so that someone purchasing this product knows that it meets the CSA reference.

George Lawson (Cotterman Co) stated that the CSA standard does not imply acceptance across Canada. The CSA standard has a different jurisdiction.

Proposed Subsection (c)(4)

Jason Moore (CS Caulkins) shared that there is this product in the industry wherein when you open the hatchway, the guardrails automatically rise. *Chair verified that this is the type of collapsible guardrails Jason Moore is referring to.*

<https://www.youtube.com/watch?v=uHA7VjMyUOo>

Matt Smylie (Ford Construction) commented that he has seen collapsible guardrails used on tank trucks. Disallowing the use of collapsible guardrails creates an added hazard for someone to put up the guardrail. Having collapsible guardrails allows for quick set-up as soon as person is on top of the tanker trailer.

Mike Donlon (Construction Employers Association) asked for the reasons for disallowing collapsible guardrails if it meets the requirement of subsection (c).

There was a question asked (member not identified) as to what the definition of collapsible guardrails is. Is it a temporary guardrail?

The Chair stated that there is a distinction between collapsible guardrails and temporary guardrails. *A collapsible guardrails does not necessary mean that it is a temporary guardrail. No definition was provided.*

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) asked if the concern centers on the need to erect the guardrails. If that is the case, the employer just has to create a proper procedure to install it. The US Supreme Court building has collapsible guardrails on the roof. Historical buildings use collapsible guardrails to preserve the look of the building back when it was built.

Jason Denning (Cal/OSHA) replied that the hazard with collapsible guardrails is that to erect the guardrail, you have to be within 6 feet of the edge, so it would require fall protection.

The Chair stated the subsection (c)(4) will be deleted because collapsible guardrails are required to meet subsection (c) and the personal fall protection standard applies when employees are erecting guardrails. In addition, members of the committee cited examples of collapsible guardrails that do not necessitate the use of fall protection.

Jason Denning (Cal/OSHA) objects to the deletion of the subsection (c)(4), because after permanently installed guardrails, there will be no need for personal fall protection as opposed to erecting collapsible guardrails. He stated that an active system is replacing a passive system.

Mike Donlon (Construction Employers' Association) stated that there is a logical time defense and it specific to guardrails. When you climb onto the platform of a tanker truck, the logical time would be that when you climb up, guardrails are erected and then you commence work.

George Lawson (Cotterman Co) noted that it can be problematic to regulate collapsible guardrails without a definition for it. The definition should not confuse collapsible guardrails with safety gates or temporary guardrails.

Jason Denning (Cal/OSHA) stated that he disagrees with the logical time defense. The collapsible guardrails being discussed is for all structures. You may be able to apply that defense for mobile vehicles. Permanent guardrails can be put up on structures before an employee goes up and enters the elevated work location.

The Chair replied to Jason that if Cal/OSHA would like to address collapsible guardrails then Cal/OSHA must expand the language to clarify the scope, define collapsible guardrails, and what situations they should be allowed and when they should not be allowed.

Jason Moore (CS Caulkins) commented that the exposure of time needed for setting up, collapsible guardrails appears to violate the requirements of section 3212(d), which requires guardrails as specified in 3209 at locations where there is routine work for any employees within 6 feet of edge. Routine work is work that occurs more than 4 times a year. Cal/OSHA has stated for many years that these collapsible guardrails are not desired and that has been interpreted by the industry that collapsible guardrails are not allowed.

Matt Smylie (Ford Construction) stated that if subsection (c)(4) stays then the use of collapsible guardrails is prohibited no matter how strong or sturdy they are, even if they meet the guardrail standard strength requirements.

Proposed Subsection (c)(5)

The Note below existing subsection (b) was relocated to (c)(5)

No comments

Proposed Subsection (d)

No comments

Proposed Subsection (e)

No comments

Proposed Subsection (f)

No comments

Proposed Subsection (g)

No comments

Proposed Deletion of Existing Subsection (c)

Existing subsection (c) contains examples of guardrails.

Mike Hein. (Con-Fab CA, LLC) commented that having some guidance about how to build guardrails that can withstand 200 pounds would be helpful.

The Chair stated that subsection (c) was written in 1978, and she was not sure if the guardrail construction listed in proposed subsection (c) would meet the guardrail requirements of being capable to withstand without failure, a force of at least 200 pounds.

Mike Donlon (Construction Employers' Association) stated that he still visits sites where they are using scraps to build guardrails, so the two by four nominal needs to be there. It is easier to identify if guardrails are not meeting the 200 pounds requirement if they are using lesser materials. Keep the description on how the posts should be attached, because that affects how the rail can withstand the 200 pounds.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C) agrees with the 2 x 4 post requirement. As a point of clarification, it is 200 pounds for top rail and 150 pounds for mid rail.

George Lawson (Cotterman Co) cautions that existing subsection(c) needs more work if it is to be kept. Other combinations of materials may be even suitable.

The Chair stated that if it is something of value then she can make a case for it to be a non-mandatory Appendix. The Office of Administrative Law (OAL) does not like text that is not mandatory.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that the guidance would be of value to smaller contractors.

Matt Smylie (Ford Construction) asked if subsection (c) can be amended as a Note as minimum design guidelines. Subsection (c) states that other combinations will be accepted as long as equivalent strength and protections are maintained.

Mike Heim. (Con-Fab CA, LLC) commented that if members want to give people the ability to provide a safe workplace, this is a useful tool. Leaving people to interpret the 200 pounds criteria is very hard for a layman to understand.

The Chair stated that it would be placed in the non-mandatory appendix.

Matt Smylie (Ford Construction) stated that subsection (c) serves as a guide for site built guardrails. It is the minimum standard that is acceptable. He cited the example for rebar troughs (see Section 1712(d)(4)(C) and Plate C-25 Protective Troughs for Protruding Reinforcing Steel). It is helpful to know what minimum standard is acceptable.

Matt Kuzemchak (Fed OSHA). Subsection (c) does not have information on how it is affixed to the ground. It would be wise to include a clear note. The employer can build to the requirements of the Appendix, but it may not pass the testing requirements. Ultimately, the employer will be held to the requirements of proposed subsection (c).

The Chair stated that if OAL would permit us to include a non-mandatory appendix, then more explanatory information can be added. For example, how it needs to be anchored or fastened.

Jason Moore (CS Caulkins Co) is in favor of subsection (c) being stricken because the scope of the safety order is in the general industry safety orders, not construction safety orders. The guardrails in general industry are typically permanent and not temporary as you would see in construction. He would rather not be pushing for wood guardrails with a quality of construction that would deteriorate.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that there are opportunities in the general industry environment to have options to use wood or pipe. Maybe wood is the least likely, but there may be an occasion where the use of wood is the best option.

The Chair replied that there are other options listed in existing subsection (c).

Mike Heim. (Con-Fab CA, LLC) stated that there is a misconception that everything in general industry is permanent. Wood is an easy material to put things together.

Action Item: Move exemplars in the Appendix and develop language to ensure that the exemplars meet subsection (c).

Subsection (i), Toeboards

Existing subsection (d) was struck out and was reorganized in subsection (i).

George Lawson (Cotterman Co) suggested not limiting the language to just piled, strike piled in subsection (i)(8).

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) suggested a generic statement like: where materials are piled or conditioned.

Dan Leacox (Leacox & Associates) stated there are lots of things higher than a toeboard. He thinks subsection (i)(8) is about materials sliding off.

Mike Donlon (Construction Employers' Association) stated all day long he finds something like a 5-gallon bucket near the toe board, so if we find it, then we would have to screen it. His suggestion was to leave it as is.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) stated that there is another safety order in title 8 regarding piling objects.

There was a suggestion to check section 3273.

[It is actually section 3241(c): “Material, wherever stored, shall not create a hazard. It shall be limited in height and shall be piled, stacked, or racked in a manner designed to prevent it from tipping, falling, collapsing, rolling or spreading. Racks, bins, planks, sleepers, bars, strips, blocks, sheets, shall be used where necessary to make the piles stable.”]

Rinaldo Edmonson (Marathon Petroleum) stated subsection (i)(8) is falling items. The language should be clear. The clarification that is needed is that if there is something stored near the edge that can possibly fall off, then something else other than a toeboard is needed.

Section 3209.1. Handholds (Grab Handles)

The term “handholds” is used often in section 3210. Grab bar is a term that is reserved for Section 3277. Fixed Ladders. The Chair displayed the proposed text, which are requirements of the federal standard. In California, grab handles are referred to as handholds in section 3210. The chair noted the highlighted term “maximum intended load” to note that it is one of the terms in section 3207.

The Chair asked if the term grab handle should be defined.

George Lawson (Cotterman Co) stated that there is no need to define grab handles unless there is a specific purpose to them like the grab bars in section 3277.

Robert Armstrong (PG&E) was concerned about grab handles that are in motor vehicles not meeting the requirements of proposed section 3209.1. As an example, he cited the 12-inch length requirement of grab bars.

Mike Donlon (Construction Employers’ Association) stated this requirement should apply moving forward and not on existing vehicles. These vehicles are in the 49 states. He is not aware if the vehicle manufacturers are up to date with the OSHA requirements.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) suggested to add an exception that the grab handle requirements will not apply to motor vehicles.

The Chair suggested to review where grab handles are used and then discuss how to address it, so that the suggestions will be mindful to ensure consistency between sections 3209.1 and 3210.

The committee replaced handholds with grab handles in instances where the requirement of section 3209.1 would apply. The title of the section will be revised to Section 3209.1. Grab Handles.

George Lawson (Cotterman Co) asked if section 3209.1 applies to grab handles located on the left or right side or each one.

The Chair replied, each grab handle must meet the requirement is subsection (a)(3).

George Lawson (Cotterman Co) suggested to add “without failure” at the end of subsection (a)(3).

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) replied that “withstanding” is sufficient.

George Lawson (Cotterman Co) replied that there is no consequence to “withstanding.”

The Chair stated that “failure” is defined in the federal standard. “Failure” is defined as a load refusal, breakage, or separation of component parts. A load refusal is the point at which the ultimate strength of a component or object is exceeded. So if the term is added, then the definition of “failure” would apply. The Chair stated that the term “without failure” was used in the suggested text for possible proposed amendments to section 3209(c): “Guardrail systems shall be capable of withstanding, without failure, a force of at least 200 pounds applied in a downward or outward direction within two 2 inches of the top edge, at any point along the top rail.”

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) cautioned against adding the term “failure”. There are other regulations where this phrase is used, withstanding means without failure. If it is added here, then it must be added in other sections where maximum intended load is used. There will be issues later on during the appeal.

George Lawson (Cotterman Co) replied that the simple solution is to add it to the other sections where it needs clarification.

Rinaldo Edmonson (Marthon Petroleum) stated there are decades of regulations that it would affect.

The Chair stated that “without failure” would be left in for now. The federal standard used it in section 3209 and “failure” is defined. Adding the words “without failure” is not a false statement.

Mike Donlon (Construction Employers’ Association) pointed out the Feds did not state “without failure” in the context of grab handles.

Robert Moutrie (Cal Chamber) advised that suggested text should be consistent with the prior use of the phrase “maximum intended load”, because not doing so introduces confusion to the courts. The court will interpret it differently if a different language was used.

The Chair replied that the phrase “without failure” was used for guardrails, so it is permitted to use “without failure” for grab handles.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) stated that the context is different in the guardrail standard. For guardrails, the context it was used was not the two times intended load, it was without failure in the context of absolute. The capacity there is 200 pounds. Here, it’s 200 times 2 or whatever the intended load is. If the intended load is 400, it is 800—so it’s a different context than what was discussed in section 3209.

The Chair stated Kevin made a good point that in section 3209.1, it has the “2 times the maximum intended load” that is not present in section 3209.

The Chair solicited comments from Cal/OSHA (Larry McCune and Yancy Yap) if they have any comments regarding the use of failure with the term maximum intended load.

Larry McCune (Cal/OSHA) suggested to amend the subsection (a)(3) to state “designed to withstand.”

George Lawson (Cotterman Co) stated that he doesn’t see the difference between designed to withstand and withstanding. There is a distinct definition of failure, because after loading, it moved a little, bent a little, it left a stress mark. If subsection (a)(3) is tied to that definition, it resolves a lot of those issues. Past practice should not hinder updating the orders, and he cautioned members about that way of thinking and not to put anything above safety.

The Chair replied that 2 times the maximum intended load includes a safety factor.

Bruce Wick (Housing Contractors of America) stated that the wording can be improved, but there are phrases that are repeated in title 8, and caution is warranted in changing

those. People are used to certain things, and the entire title 8 will not be changed if new language is added in this section.

Yancy Yap (Cal/OSHA) stated if it withstands 200 pounds and it's bent, it means it has yielded but still held the load. If it is built under the without failure standard, then you are making a robust grab handle. He did not know if that adds cost or materials. There is a distinct difference when building it to without failure versus just the yield.

The Chair then moved to delete without failure because if federal OSHA wanted the grab handle so that it doesn't yield, then it would be written there as without failure.

Section 3210. Guardrails and Fall Protection at Elevated Locations

EXCEPTIONS as it relates to section 3209.1

Subsection (a)

Exception 2 to subsection (a), the term handholds was replaced by grab handles. The requirements in section 3209.1 would apply

Subsection (b)

There are two exceptions where the term handhold is used, existing exception no. 7 and existing exception no. 9.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) asked to verify that there is no definition for handholds.

The Chair replied that there is no definition of handhold.

Mike Donlon (Construction Employers Association) suggested an exception in section 3209.1 to state that the section does not apply to motor vehicles. These manufacturers are not going to build them to California specifications, and it will become a nightmare for companies like PG&E.

George Lawson (Cotterman Co) asked for clarification regarding the use of the terms "handhold," "grab handle" and "grab bar."

The Chair stated that the terms "handholds," "grab handles," and "grab bars" appear similar, but there is a distinction between them. Existing use of the term "handholds" is synonymous with federal term "grab handles," which is in section 3209.1. The term "grab bar" will be used exclusively in the context of fixed ladders per section 3277. In section 3277, "grab bars" is defined as "individual handholds placed adjacent to or as an

extension above ladders for the purpose of providing access beyond the limits of the ladder.” There is no proposed definition for handholds or grab handles. Handholds (grab handles) have a different set of requirements than grab bars under section 3277. Section 3209.1 does not apply to grab bars.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) asked if there is a need to have handholds in section 3209.1 or if they can be two distinct things.

Ralph Armstrong (PG&E) suggested keeping the fixed ladders alone and eliminate the term “handholds” and replace them with “grab handles”.

The Chair agreed that to replace the term “handholds” with “grab handles”. The committee members clarified that there will be no proposed changes to Exception no. 10, regarding motor vehicles.

Amalia Neidhardt (OSHSB) stated that Cal/OSHA has jurisdiction over vehicles when they are stationary.

The Chair stated that she can provide Ms. Neidhardt the copy of the federal final rule that discuss the issues with regards to motor vehicles.

Jamie Carlile (Southern California Edison) stated that for clarity, he suggested replacing “handholds” with “grab handles” and to write in an exception in section 3209.1.

Mike Donlon (Construction Employers’ Association) suggested that instead of creating an exception, change the title of section 3209.1 to Grab Handles and replace “handholds” with “grab handles” except for motor vehicles.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) agreed with Mike Donlon.

The Chair reviewed proposed changes to the Exceptions, and there were no other comments.

Continuation of Section 3210.

Subsection (a)

- The terms that were highlighted notes that those terms are defined in section 3207.
- Exception no. 1, a phrase “and each employee is provided with and uses a personal fall arrest system or fall restraint system in accordance with Section 3210.1 of these Orders” was added in order to be as effective as the federal

standard.

- Exception no. 3 contains new language. The chair referred the committee to section 3336.
- Exception no 11, the cross reference was changed to the new personal fall protection standard.

Subsection (b)

- Exception no. 1, a phrase “and each employee is provided with and uses a personal fall arrest system or fall restraint system in accordance with Section 3210.1 of these Orders” was added in order to be as effective as the federal standard.
- New exception no. 3 was added. The red text regarding the Note to Exception 3 was editorial.
- Exception no. 6 contains the cross reference to the new personal fall protection standard
- Exceptions no. 11 and 12 were added to refer to telecommunication and electrical work covered under their respective vertical sections.

Section 3210.1. Personal Fall Protection Systems.

The Chair stated that eventually this section will be harmonized with the Construction Safety Orders. It is important to review this proposed new section thoroughly because it will affect many industries. There will be many cross references to this section.

The Chair asked the committee members to read the scope and application, subsection by subsection and then comment.

Proposed Subsection (a). Scope and Application

Mike Donlon (Construction Employers’ Association) asked if a comparison of 1910 and 1926.501 was completed. He asked if the federal GISO is pretty similar to the federal construction regulations.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that when OSHA created the 1910 regulations, they specifically made it in accordance with subpart M. The only specific difference is the gate strength of the snap hook. They did change that in the general industry because the Z359 changed the snap hook gate strength to 3,600 pounds back in 2007, but he did not think it was technically changed in 1926. That is the main difference.

General Industry

Section 1910.140(c)(8)

D-rings, snaphooks, and carabiners must be proof tested to a minimum tensile load of 3,600 pounds (16 kN) without cracking, breaking, or incurring permanent deformation. **The gate strength of snaphooks and carabiners must be capable of withstanding a minimum load of 3,600 pounds (16 kN) without the gate separating from the nose of the snaphook or carabiner body by more than 0.125 inches (3.175 mm).**

Construction

1926.502(d)(3)

Dee-rings and snaphooks shall have a minimum tensile strength of 5,000 pounds (22.2 kN).

1926.502(d)(4)

Dee-rings and snaphooks shall be proof-tested to a minimum tensile load of 3,600 pounds (16 kN) without cracking, breaking, or taking permanent deformation.

The Chair stated that the committee is trying to accomplish the same thing as Fed OSHA to eventually have only one standard for personal fall protection systems.

Proposed Subsection (b). Definitions

The Chair asked the committee to review the proposed definitions and then comment.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) commented regarding the definition of personal fall restraint (tether) line. It appears to be restricted to rope or wire rope. He asked if nylon has the required strength, and it may not be classified as rope or wire rope.

The Chair stated that further down the section, there is a requirement that the fall restraint line be 5,000 pounds. The Chair verified that the proposed definition is the same as the federal standard with the exception of the use of the term “fall restraint” instead of “travel restraint.”

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) asked if the federal standard intended to exclude nylon webbing.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that in Z359, the term used is “line constituent,” and that allows the flexibility of wire rope, synthetic rope and also webbing.

The proposed definition for “Personal Fall Restraint (Tether) Line” was amended to: “A line constituent used to transfer forces from a body support to an anchorage or anchorage connector in a fall restraint system.” The words “rope or wire rope” were struck out.

There were multiple comments stating that they did not find the term “personal fall restraint (tether) line” in the federal standard. This was because the federal standard uses the term “travel restraint” as opposed to “personal fall restraint.” There was a notation [§ 1910.21(b)-travel restraint system] to the proposed definition to indicate where the definition came from. Prior to the meeting, the discussion draft was amended to add “Travel Restraint System.” See “Personal Fall Restraint System” for clarity.

Jason Moore (CS Caulkins) asked a question about why certain definitions are deleted from title 8, sections 3207 and 3281. He was concerned that it would be difficult to find those definitions once they are moved.

The Chair replied that the personal fall protection requirements from other sections are being consolidated into section 3210.1. Section 3281 is going to change. The definitions in section 3207 applies to the entire general industry safety orders, and the definitions in section 3210.1 applies only to section 3210.1.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) commented on the technical accuracy of the definition of “self-retracting lifeline/lanyard” and suggested to use the ANSI definition. He assumed that members are familiar with the leading edge device for self-retracting lifelines. He stated that there is a flaw in the definition because it says at the onset of a fall, the device automatically locks on the drum. With a leading edge device, since you are above your anchorage, at the onset of a fall, it has to get on the neutral position and then start to pay out.

Self-Retracting Lifeline/Lanyard. A deceleration device containing a drum-wound line that can be slowly extracted from, or retracted onto, the drum under slight tension during normal movement by the employee. At the onset of a fall, the device automatically locks the drum and arrests the fall.

The Chair asked if this is related to the Class 2.

ANSI Z359.14-2021

1.4 Self-Retracting Classes

1.4.2 Class 2. Self-retracting devices which are intended for applications wherein overhead anchorages may not be available or feasible and which may, in practical application be subjected to a free fall of not more than 6 feet (1.8m) over an edge prescribed in Section 4.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that yes, it relates to the new Class 2, Z359.14-2021 standard. The definition may have to be amended by bring in the new Z359 definition. Class 2 doesn't lock up on the drum at the onset of a fall.

ANSI Z359.0-2018

ANSI Definition

2.1779 Self-Retracting Device (SRD). A device that contains a drum wound line that automatically locks at the onset of a fall to arrest the user, but that pays out from and automatically retracts onto the drum during normal movement of the person whom the line is attached. After onset of a fall, the device automatically locks the drum and arrest the fall. Self-retracting devices include self-retracting lanyards (SRLs), self-retracting with integral rescue capability (SRL-Rs) and self-retracting lanyards with leading edge capability (SRL-LEs) and hybrid combination of these.

2.180 Self-Retracting Lanyard (SRL). A self-retracting device suitable for applications where during use the device is mounted or anchored such that possible free fall is limited to 2 feet (06m) or less. (Z359.14-2012)

Mike Donlon (Construction Employers Association) asked if the federal rules came out before then.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that leading edge devices came out in 2012. The Walking-Working Surfaces rule was published in 2016.

Action Item: Copy the ANSI definition of SRL in the proposal.

Proposed Subsection (c). General Requirements

Post AC subsection (c)(3)

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) said that proposed subsection (c)(2) does not call out aluminum as a material used. Many manufacturers are using aluminum now to save on the weight. There is a statement stating "equivalent material," but only steel is called out. He asked if it is necessary to add aluminum.

The Chair asked if there is a quality related to the aluminum.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that there are certain grades that are better than others. One test recently included in our Z359.12 standard on connectors tries to bend a snap hook. There are two bearing points, but it tries to bend it the other way, such as if a snap hook was laying on a ledge and bent over. Certain grades of aluminum that are more brittle than others probably wouldn't survive that test. If wanted, he could provide some clarity as far as what limitation or what can you put in there.

The Chair responded yes, because since the regulations are being updated, it might as well be updated to the current industry standard.

Action Item: *Finalize the language of post AC subsection (c)(3).*

Mike Donlon (Construction Employers' Association) asked if the arc rating of the harnesses weigh into that too.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that the arc rating ANSI references, he believes, is ASTM F-887.

Mike Donlon (Construction Employers' Association) asked if you can use some metal hardware.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that they are typically covered by maybe a piece of leather or something to minimize the calories that hit the person. The F887 standard is typically what is used.

Post AC Subsection (c)(4)

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) commented on proposed subsection (c)(4). He stated that the term "vertical lifelines" are not as frequently used now, because they are not always vertical. Sometimes they are used in roof application. ANSI has started to use the term "single point lifeline." It is important because some lifelines have multiple points. It is anchored at one point and the other end is free.

The Chair asked if the discussion draft can be amended to "vertical (single point) lifelines."

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) suggested to use "or."

The Chair replied that the industry is going away from using the term "vertical lifelines" and is starting to use "single point lifelines." Since the industry is in a stage of transition, she suggested putting the term in parentheses so that people become more aware of the term.

Chuck Wigger (Lamar Advertising) asked about "vertical lifelines" used in fixed ladders.

The Chair asked if he is asking about "ladder safety system."

Chuck Wigger (Lamar Advertising) replied yes. Sometimes they can be attached at the top and the bottom and those are single points.

Mike Donlon (Construction Employers Association) stated that “ladder safety systems” were covered during the last meeting on fixed ladders.

The Chair concurred that “ladder safety systems” were covered during the last meeting, February 20, 2020. See proposed subsection 3277(j), page 18 of 31.
<https://www.dir.ca.gov/oshsb/documents/Walking-Working-Surfaces-AC-postproptxt.pdf>

Rinaldo Edmonson (Marathon Petroleum) asked if subsection (c)(4) needed to be adjusted because “wire rope” was replaced with “rope constituents” earlier.

Post AC Subsection (c)(5)

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) suggested to amend the text to delete “wire rope” and replace with “lifelines or.” He also suggested deleting “spliced or swaged” with “terminated” to keep the method of terminating the lanyard open, such as sewn.

He also had a comment regarding the sentence relating to knots. He asked how rope access will figure into the standard.

The Chair replied rope access is not included in this section. There is a separate title 8 section for rope access, section 3270.1. Use of Rope Access Equipment.

The Chair asked if proposed subsection (c)(5) is for Class 1 SRL.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that it depends on how it is rigged. Class 2 will also lock up. If the Class 2 is anchored above you, then it should lock up at about 2 feet.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) commented on subsection (c)(5) stating that the latest version of Z359.14 bumped up the 3,000 pounds to 3,600 pounds.

The Chair asked about the old equipment.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that some are still out there and some of it is still being manufactured to 3,000 pounds. So the 3,000 pounds requirement can remain so that they could still use their existing equipment.

Post AC Subsection (c)(6) and (c)(7)

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) commented on subsection (c)(6). He asked if the statement “self-retracting lifelines that automatically limit free fall distance to 2 feet” is based on the device or how it is rigged. Class 2 lifelines only have a tensile

strength of 3,600 per ANSI Z359.14. Based on what other manufacturers have told him, he does not believe there is a self-retracting device that is a foot level tie off that would be capable of 5,000 pounds.

The Chair asked if in other classes whether there one that is capable of 5,000 pounds.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) responded, yes, in Z359, both Class 1 and Class 2 have a 3,600 pound requirement. The original focus for subsection (c)(6) was lanyards, which would typically allow a 6 feet free fall. They are required to have a tensile strength capable of 5,000 pounds. That was the big differentiation between personal absorbing lanyards and self-retracting devices.

The Chair noted that this requirement is from title 8, appendix C, section I (c)(5), the Chair then asked if proposed subsection (c)(6) can be deleted.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) said that what the Feds would say is lifelines and lanyards that do not automatically limit the free fall to two feet or less shall have components capable of sustaining the minimum tensile load of 5,000 pounds. That's how they were looking at lifelines and lanyards instead of just specifically to self-retracting lifelines.

The Chair asked then if "self-retracting lifelines" should be deleted.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replies yes, you could delete self-retracting and add lanyard to state, "Lifelines and lanyards that do not limit the free fall distance to two feet or less"

Post AC Subsection (c)(8)

The Chair added proposed subsection (c)(7) stating Class 1 self-retracting device (SRD) shall only be anchored overhead.

Mike Donlon (Construction Employers' Association) commented that he believed that SRDs did not have to be overhead. It had to be higher than the attachment point on the person's back.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) clarified that it must be anchored above the dorsal D-ring.

Mike Donlon (Construction Employers' Association) suggested higher than the dorsal D-ring.

Rinaldo Edmonson (Marathon Petroleum) asked if that is above your neck or above your shoulders.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied it is typically armpit line, plus or minus 2 inches.

The Chair asked if the older SRD was equivalent to Class 1.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) answered no. ANSI now includes what is called locking strength so when the SRL locks into a housing, there is now a test as to how it is anchored in there.

Larry McCune (Cal/OSHA) stated that the Chair is adding text that is not in the federal standards. He was concerned about intermixing the proposal with standards that have not been adopted by the Board. He cautioned that the committee needs to be careful of how many things are mixed and matched.

The Chair replied that there is a hazard with using a non Class 2 for anchoring below.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) asked if generic text can be added very similar to what was discussed about before where the device shall be used as such that it meets the free fall requirement as stipulated by the manufacturer. Something to make sure that when you are using the device overhead that is ok. But if they are anchoring the device lower, they need to make sure that they follow what the manufacturer has stipulated.

The Chair replied that the text enables the employee to be able to read, "this equipment is Class 1," and they need to anchor it overhead. They cannot anchor it at foot level.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) remarked that Larry brings up a great point, because there is a huge amount of items that are not tested related to foot level tie of a self-retracting device. For example, the edge that the Z359.14 user has a 0.005 radius on it, which means it's sharper than a piece of pipe, but it's not a knife blade and yet there are also areas where you have structural steel edges that might be sharper than that. There are structural steel edges that have little nicks and burrs that might be bad. There are demolition edges, concrete edges, stock steel edges, bent plate edges that are not stipulated. So it's somewhat either an all or nothing. He believes that Larry was thinking of somehow stipulating that it has to be used per manufacturer's instructions. A nice catch all statement that can allow the standard to evolve as the manufacturer testing evolves.

The Chair stated that another reason that this is a regular rulemaking as opposed to a Horcher is to have some flexibility to update our standards to the latest standard if the committee wants to. The decision to update the standards can be recommended by the

committee. The committee has an opportunity to recommend upgrading the standards to what is already on the market. Class 1 and Class SRD are on the market, and not having requirements regarding their use does not serve the employee.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) suggested adding a note under subsection (5) or (6) that informs the reader that there are different technologies out there such as the Class 1 and Class 2. This provides flexibility amongst employers.

The Chair stated that there has been ANSI updates after the federal walking-working surfaces updated regulations. She asked the committee to consider the updates to the ANSI standard regarding crafting regulatory language.

Jason Moore (CS Caulkins) commented that in proposed new subsection (c)(8) Class 1 was mentioned, but Class 2 was not mentioned. Also, there are not a lot of instances where one can anchor overhead and asked if it is possible to just require the use of Class 2 for everything.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that there are cost ramifications tied to restrict SRD to just Class 2.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) added that there is already inventory out there.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) expressed his concerns about low or floor level tie off. He said the reason why the name was changed from SRL LE to Class 2 is because there is a perception that it encourages leading edge falls. They may not hit the ground, but people were getting seriously injured from leading edge falls. There is a specific orange card that goes with this device stating that you may get seriously injured using this device, because every part of your body passes by that edge including your legs, hips, ribcage, arm, shoulder and face. Foot level tie off should not be encouraged. The United Kingdom Health and Safety Executive (federal OSHA counterpart) prohibits devices—whether it is an SRD or lifeline—to be used such that the line can contact the edge. He would like to see California take leadership in this area in a reasonable manner to not allow lifelines or lanyards where they could contact the edge. He is unsure if there is an appetite for that, but that would be a groundbreaking health and safety initiative and set the tone for the rest of the country.

Post AC Subsection (c)(1)

Chuck Wigger (Lamar Advertising) stated the standard changes every few years and whatever changes the committee makes will soon be outdated. His preference is to write language that follows what the manufacturer says.

Mike Donlon (Construction Employers' Association) suggested possibly an appendix regarding the use of Class 1 or Class 2. He agrees that there should be a statement that states that the fall protection be used in accordance with manufacturer's instructions.

A general statement was added to subsection (c)(1) to state that "personal fall protection systems shall be used in accordance with manufacturer's instructions" to address issues relating to the lag in updating the fall protection safety orders and to provide instruction regarding the use of other self-retracting devices. The addition of subsection (c)(1) caused the renumbering of the subsections.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) asked if California has a general duty clause.

The committee responded no.

Post AC Subsection (c)(13)

Chuck Wigger (Lamar Advertising) had a question regarding the source of subsection (c)(11)(A), where it states a professional engineer.

The Chair responded that it is from appendix C to article 6, section I (c)(9) and the federal counterpart to that is section 1910.140(c)(11), which states that it must be designed, installed, and used by a qualified person. In California, the registered engineer is the qualified person. The language regarding a professional engineer was from appendix C:

Qualified Person, Attendant or Operator. A person designated by the employer who by reason of their training and experience has demonstrated their ability to safely perform their duties and, where required, is properly licensed in accordance with federal, state, or local laws and regulations.

Mike Donlon (Construction Employers' Association) commented that there is no way employers are going to hire an engineer every time they put up a lifeline system. He doesn't know where the appendix C is. There is an engineered system that if you install them to manufacturer's instruction, they function. It's not like the old days where you had to calculate the sag and do all that stuff to get the system to work. They are designed by an engineer to be installed by a qualified person.

Chuck Wigger (Lamar Advertising) commented that the horizontal lifeline (HLL) must be used under the supervision of the professional engineer. He said it is impossible for every construction site, every employer to have a professional engineer that is experienced in such a design on staff and available 24 hours.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that just because it said used under the supervision doesn't mean that a qualified person would have to be there on site. As a professional engineer (not registered in the State of California), he has engineers who design fall protection systems under his supervision, but he is not looking over their shoulders throughout the entire time.

Mike Donlon (Construction Employers' Association) reiterated the used under the supervision portion of the text.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) stated an employer experienced in the installation of HLL, follows the manufacturer's requirement, and makes sure when an anchor point must have engineering on it. The intent of this is now to put California engineers on this. There are a lot of things that are not designed by CA engineers, because you can buy it off the shelf.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) said as an engineer, the portion that he is looking at is the entire fall protection system. The proposal is not talking about the individual components. Engineers would look at what the manufacturer's information says about the components then rate the anchorages in which the horizontal lifeline are attached to make sure that the entire system is sound.

Mike Donlon (Construction Employers' Association) said that the Feds says a qualified person and the discussion draft says that the engineer has to go out to every site where their system is installed to make sure that the end connection points are ok. He believes that the requirement should be a qualified person. The State does not have enough engineers to do this work.

The Chair stated that the language regarding "used under the supervision" can be clarified. She believes what Thomas Kramer (ANSI Z359 Chair, LJB Inc.) said is he designs a system that is being used, but they cannot alter his design without his approval.

The Chair stated that these horizontal lifelines are quite complicated and should be designed by an engineer.

Larry McCune (Cal/OSHA) suggested to separate them, where the design and installation is by an engineer and then the use is supervised by the competent person or qualified person.

Section 3210.1 Personal Fall Protection Systems

Competent Person (Fall Protection). A person who is capable of identifying existing and predictable hazards in any personal fall protection system or any component of it, as well as in their application and uses with related equipment,

and who has authorization to take prompt, corrective action to eliminate the identified hazards.

Section 3207. Definitions

Qualified Person, Attendant or Operator. A person designated by the employer who by reason of their training and experience has demonstrated their ability to safely perform their duties and, where required, is properly licensed in accordance with federal, state, or local laws and regulations.

Chuck Wigger (Lamar Advertising) stated that he is not opposed to the design part, but the install and use portion should be separated.

Larry McCune (Cal/OSHA) said that horizontal lifelines should be designed by an engineer with experience. Based on Cal/OSHA's field experience, there are a lot of engineers who don't understand horizontal lifeline systems.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that some of the worst designs that he has seen are from professional engineers. They don't take into account the safety aspect. There's the structural aspects, and there's the safety aspect. They don't design them to take into account the human factors.

Mike Donlon (CONSTRUCTION EMPLOYERS' ASSOCIATION) stated that for an engineer to design something and put their stamp on it, they have to be qualified in that area of design. He asked how many engineers does the state of California have who are qualified in fall protection, probably very few. Cal Trans licensed engineers designed a system, and someone died falling off the Benicia Bridge. This Appendix C applies to powered platforms and building maintenance. He believes the requirement for a registered engineer is overused. There are systems from DBI Sala that a qualified person can install following manufacturer's instructions and it will be safe.

The Chair stated that horizontal lifelines must be designed by an engineer. There are four methods according to the ANSI standard to design these systems. There's the energy balance method, dynamic method, static method, and testing method. As far as the supervision portion, they can be supervised by a qualified person.

Mike Donlon (Construction Employers Association) and **Kevin Bland** (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) stated that the DBI Sala systems are designed by engineers but not by engineers registered in California.

George Lawson (Cotterman Co) suggested that the design be reviewed by an engineer instead of designed by an engineer from the State of California.

Mike Donlon (Construction Employers' Association) stated that the federal language said that the employer must ensure that each horizontal lifeline is designed and installed under the supervision of a qualified person and as part of a complete fall protection system that may need some safety factors. He suggested to use the federal standard language.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) stated that the proposal is an expansion of what is in Appendix C to Article 6.

The Chair replied that the members are discussing the suggestion to separate out the design portion from the installation and supervision.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) said as an engineer, he reviews the DBI Sala product information and designs the horizontal lifeline. He evaluates the anchorages, evaluates the overall system, writes the procedures and all the inspection requirements, and so forth then stamps it because he has the data to size the fastener. He didn't design the fasteners, but he analyzed the design of the fasteners and created a system as the professional who stamps it.

Mike Donlon (Construction Employers' Association) commented again about buying a DBI Sala system.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that what you are buying from DBI Sala is an anchorage connecting subsystem. The entire system including the anchorage is the horizontal lifeline system.

Mike Donlon (Construction Employers' Association) countered that DBI Sala calls it a system.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that as a professional engineer, he needs to evaluate where it is attached to. That is what that clause is saying. Then you create procedures and so forth.

Mike Donlon (Construction Employers' Association) asked, if we are separating the design from the installation and supervision, but the engineer is required to be registered in the state of California, what is the reason that only California engineers can do this.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that an engineer not registered in California cannot stamp the drawings. If a building official were to look at a set of drawings that he stamped and see it is from the State of Ohio, they are automatically going to reject that.

Mike Donlon (Construction Employers' Association) insisted that the committee hold back and review the preamble because he is guessing that preamble states that a qualified person can buy from DBI Sala and the only thing that is required is to determine if the attachment points are strong enough. He also asked if the Chair knows how many engineers are qualified to do this in the State of California.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that the people that act as fall protection engineers have a civil, structural, mechanical type backgrounds, but he completely agrees with Donlon. You just don't want to grab a bridge engineer and say design me a fall protection system.

Mike Donlon (CONSTRUCTION EMPLOYERS' ASSOCIATION) replied that the professional code states that it is to be specific to what a licensed engineer can do. It has to do with the scope of your knowledge base. He believes there is a problem with the requirement to have an engineer.

There was a question if an engineer is a qualified person.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that an engineer is not always a qualified person. They are required to have experience in that area. However, the requirement to have a professional engineer already applies to places where you are hooking into part of the structure is already required by the building code.

The Chair stated that for the time being, the draft proposal will separate the design professional engineer.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) commented that the struggle is that there is a horizontal lifeline out of the box, and it tells you everything. Then it says it is up to you to make sure that what you are attaching to has the capability, and that is where a professional engineer comes in. If you are attaching this to wood, steel, concrete, can it support what is coming out of the box?

The Chair stated that this is beyond that. There is knowing what tensions you have on the line, multiple users, simultaneous falls, etc.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) asked what the registered California engineer portion is.

The Chair replied that she can talk to the Building Code people and report back.

Action Item: Determine if a California registered engineer is required for permanent fall protection attachment points for a building.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) replied that the number of users is specified in the horizontal lifeline set. The manufacturer has already done the manufacturing of the system.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) suggested text to state that all horizontal lifelines be designed to Z359.6-2016. ANSI doesn't necessarily require a registered engineer in the State of California; it only requires an engineer.

The Chair asked if there is any objection to that suggestion.

Dan Leacox (Leacox & Associates) stated that in prior discussions, there were concerns about the fall protection standard becoming antiquated overtime. He favors adopting the federal language.

The Chair stated that she is in favor of Thomas Kramer's (ANSI Z359 Chair, LJB Inc.) suggestion because the engineering principles remain the same. The products may change, the specifications on the product change, but the engineering analysis to study the forces remain the same.

Michael Donlon (Construction Employers' Association) stated that he pulled up the DBI Sala horizontal lifeline system, and it gives detailed instructions on how to attach it to a structure including bolt size, anchor tie. This isn't the old days where you bought some wire rope and hooked it to some beams.

River Blough (Swinerton) questioned the feasibility of the requirements in a construction site.

The Chair requested Mike Donlon to send a link to the horizontal lifeline product information.

Day 2

The Chair received some e-mails from members. Rob Moutrie (Cal Chamber) sent language to clarify the Note in section 3209.

Dan Leacox (Leacox & Associates) submitted an exception to section 3210(b). The Chair did not read the proposed text in the meeting and stated the proposal is available for the members to read. The Chair did not discuss it during the meeting. The suggested exception has not been reviewed yet to ensure that it is at least as effective as the federal standard.

There were some questions regarding the proposed text subsections 3209(c)(3) and (c)(4). Cal/OSHA as an enforcement agency may submit what is called a Form 9 to OSHSB. Since these issues are sufficiently related to this rulemaking, it was efficient to discuss them during this advisory committee meeting.

Regarding collapsible guardrails per subsection (c)(4), if Cal/OSHA wants to reopen the collapsible guardrail portion in subsection (c)(4), then the Chair is asking for a formal Form 9 submission for the proposed text regarding collapsible guardrail. The Chair is studying how to address issues surrounding subsection (c)(3).

Note in Section 3209(b)

Suggested text by **Rob Moutrie** (Cal Chamber) in red:

(b) A standard guardrail shall consist of top rail, midrail, or equivalent protection, and posts, and shall have a vertical height within the range of 42 inches to 45 inches from upper surface of the top rail to the ~~floor, platform, runway, or ramp level~~ walking-working surface. (Note: the permissible tolerance ~~on~~ in height over the course of the guardrail dimensions is one inch). See Figure 3209-1 of this section. ...

(1) Midrails, screens, mesh, intermediate vertical members, solid panels, or equivalent intermediate members shall be installed approximately halfway (within a 1 inch tolerance) between the top rail and the walking working surface when there is not a wall ...

Larry McCune (Cal/OSHA) had an unrelated comment to the Note. His comment was about the design of a guardrails in subsection (c)(1), the deflection after the 200 pound load applied to the downward direction of a guardrail. He noted that there was no limitation on the horizontal deflection. Cal/OSHA is concerned that subsection (c)(1) is not as effective as the California Building Code standard because existing subsection (b), which has a 20 pounds per linear foot, is proposed to be deleted.

The Chair replied that the California Building Code actually specifies 50 pounds/ft. They updated it from 20 pounds. There is a note on the bottom of this section informing the reader that there are other requirements from the building code that they would have to comply with.

2022 California Building Code, Title 24, Part 2

1607 A.9.1 Handrails and guards.

Handrails and guards shall be designed to resist a linear load of 50 pounds per linear foot (plb)(0.73kN/m) in accordance with Section 4.5.1.1 of ASCE 7. Glass handrail assemblies and guards shall comply with Section 2407.

Exceptions:

Mike Donlon (CONSTRUCTION EMPLOYERS' ASSOCIATION) stated that the tolerance is already included in the 42-45 inches guardrail height. The issue comes when using something like a wire rope that isn't necessarily a stiff member and it has a sag. That is reason why there is the three-inch variance on guardrails in California. It has been around for decades. The one-inch is an unenforConstruction Employers' Associationble note, but there is already a three-inch tolerance in the standard. He doesn't want a 41-inch-high guardrail. He suggested deleting the Note regarding the one-inch tolerance, because there is already a three-inch tolerance.

Robert Moutrie (CONSTRUCTION EMPLOYERS' ASSOCIATION) stated that the proposed text he submitted was to clarify the note based on yesterday's discussion. He is not defending the text he submitted. He just wants clear language based on the discussions. His concern is with the historical interpretation, to make sure that the proposal is consistent with the practices and how it's been looked at. If everyone in the room thinks that 42 to 45 inches was traditionally used and that was allowed for the necessary dip of a non-solid top rail, then he was not against that requirement, but his goal is to have language as clear as possible.

The Chair understood Mr. Armstrong's comment yesterday to be that the one-inch deviation was for the entire span of the guardrail due to the changes of elevation that there might be a one-inch deviation from 42 to 45 inches.

Robert Armstrong (Pacific Gas and Electric) clarified his comment and said that the one-inch deviation was within the 42 to 45 inches, and you still couldn't have a guardrail that is 41 inches high. In his conversations with Jason Denning (Cal/OSHA), 42 to 45 inches was absolute with some deflection in between, but not beyond those bounds.

The Chair stated that Mr. Armstrong's comment is in agreement with Mr. Donlon's comment.

Jason Denning (CalOSHA) also agreed with Mr. Donlon.

Matt Smylie (Ford Construction) stated that there was a recent decision in the Cal/OSHA Reporter about a shortfall of one-inch. The language that was used in the decision was, "According to vertical height of the guardrail, the rail did not comply with the safety order requirements to be between 42-45 inches and the shortfall was in-excess of the one-inch permissible tolerance." The way that reads is you have 42-45 inches with a permissible one-inch tolerance on top of that.

The Chair stated that this why the Note needs to be clarified. It could be a clarity issue and that is why the judge is ruling that way. The note might be adding confusion to what was originally intended, so she will review the rulemaking record and look further into the building code and see how to proceed from there.

Matt Smylie (Ford Construction) said that the federal standard should also be reviewed to see what their intent was and to make sure that the proposal was effective as the federal standard. He also was concerned that there may be other cases that may be affected if changes to the safety order are made.

George Lawson (Cotterman Co) stated that it would be great if the one-inch tolerance can be removed because it is unnecessary, the 42-45 inches is clear and concise and easy to follow. The federal standard is 42 inches, plus and minus three inches.

Continuation of Section 3210.1

Jason Denning (Cal/OSHA) supports the proposal for the horizontal lifeline to be designed by an experienced California registered professional engineer. He agrees that the installation and supervision can be adequately supervised by a competent person. Cal/OSHA is opposed to the other option of requiring the design to be in accordance with Z359.6 because the design would require the expertise of an engineer, and it would be better to state that.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that Z359.6 does state that an engineer must design the system. The standard does not require a professional engineer to design the system, because you could have a general contractor who has an engineer working under their liability. The standard doesn't necessarily require a professional engineer, but it requires an engineer. It also gives requirements in addition to the design, such as installation and use procedures. The focus of Z359.6 is design, installation and use under the supervision of a qualified person with a factor of safety or as part of a complete system.

The Chair asked if an engineer was required, but not a professional engineer, would that be acceptable to Cal/OSHA?

Jason Denning (Cal/OSHA) replied, no because Cal/OSHA couldn't hold them to the same standard as a licensed engineer.

The Chair stated that there were a lot of comments yesterday about the availability of engineers who can design horizontal lifelines fall protection systems. When she took the class, about 20 of them were engineers who work on the design of fall protection systems. Engineers can obtain that additional knowledge by taking the class. Designing a horizontal lifeline is different from the typical personal fall protection system.

The Chair stated that she looked at the DBI Sala that Mr. Donlon sent. The rope has a tensile strength of 12,000 pounds. You can put enough tension of that rope that you can collapse the anchor. She was trying to use the software that she learned to use from her class. There are some variables that were difficult to find. She was trying to find the kilopound-force per square inch (ksi) for this rope.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) replied that he doesn't disagree with the Chair. With DBI Sala, you are getting a system off the shelf with factors accounted for. Many of these systems are pre-designed. Systems are no longer being designed from scratch. The manufacturers mass produce these systems, and the employer chooses one for their application. What are you attaching that DBI system to? What are the limitations? How many people can attach to it?

The Chair reviewed the manual, and there were these spans and clearance requirements. The Chair was unable to make a determination if these clearances and spans were in accordance with ANSI. The Chair was unable to determine if the manual included the clearance margin of two feet, and what number was used to account for the harness stretch. There are many factors that must be taken into account when designing a horizontal lifeline. Someone has to figure out, does it have the clearance margin of two feet, what number in feet was used for the harness stretch, what kind of personal energy absorbers were used, what is the length of the lanyard. So it is the engineer that puts all those things together in addition to determining how it is to be anchored, how is it going to be used, does it account for swing falls. For example, if there are two people, is the clearance requirement so high because of the sag, are you even following the federal standard, which requires a deceleration distance of only 3.5 feet and a free fall distance of only six feet. *Page 12 of manual, Table 2, the clearance requirement for 2-workers with a span of 50 feet, using a 10-foot lanyard is 42 feet and 10 inches. It is not clear to the Chair if the 10-foot lanyard as shown on the table includes the deployed length of the personal energy absorber, the - feet clearance margin and the harness stretch.*

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that there are multiple types of systems. The kit system from DBI Sala that Mr. Donlon is talking about, those systems have become prevalent. In essence, the manufacturer outlines all the anticipated forces. They give some reactions that an engineer might. For example, if it is tied off to a pre-stress beam or a concrete bridge beam or something it is attached to. Those are very common, and it really simplifies what design a qualified person has to do to integrate them into the project. But there are other types of horizontal lifelines.

There are those “homemade systems” where somebody takes a piece of wire rope, has some Crosby clips or some Fist Grips (the type you put on the end) and they just string it between 2 points. Those are systems that need to be evaluated a lot more because there is no design guidance given by the manufacturer.

There is another system where it has to be very well incorporated into the design of the structure, for example, one manufacturer called Latchways. Latchways gives some general parameters, but those are very customized. They are not the plug-and-play type systems, like the DBI Sala that Mr. Donlon was referring to.

There are all these different variations, and the discussions have been trying to address those variations with one statement. Collectively, members may be saying the same thing; the statements may be accurate, but when talking about different systems, they mean different things.

On the one system that he thinks Mr. Donlon was talking about yesterday, they have really simplified it so the amount of information the engineer has to go through is very simple. However, there are numerous systems that are not simplified, and the committee is trying to help create a standard that addresses all those.

The Chair asked, is there a level of complexity that can be defined, to where an engineer would be required to design these systems?

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied and said that ANSI has been trying to do that for about 10 years on the ANSI committee and hasn't created a standard yet. So there are some challenges associated with it.

Bruce Wick (Housing Contractors of America) had a question regarding Mr. Kramer's suggested language: Are there qualified, well-developed systems across the country that could not be used unless a registered professional engineer in California was hired? In other words, with that limit, could a truly effective system be purchased and, if used, does it have to comply with the ANSI standard? Does that cover enough of the complexity? For the layperson contractor asking what can I look at that tells me it qualifies and/or what I have to do. Does ANSI say, okay, this is the kind of engineering thoughts that is required from here?

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied yes, I think Z359.16, if you're referring to item 13, "The employer shall ensure that each horizontal lifeline system in accordance with ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems, section 8.3, which shall be incorporated by reference." He said that ANSI Z359.6 addresses any of those horizontal lifelines that he just mentioned: kit systems, the homemade systems, or the Latchways types, the more architectural horizontal Lifeline systems that go on roofs and things like that.

Bruce Wick (Housing Contractors of America) asked if some of those systems that are effective would be disallowed because they were not designed by a registered, California professional engineer.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied that Z359.6 simply says an engineer. It doesn't say professional engineer, because for some organizations, for example, a large manufacturing facility, their engineers are not normally registered as professional engineers because their liability is covered by the manufacturing facility. If they make a mistake, it is the liability of the manufacturing facility that covers them. They do not need to have the professional liability. Whereas a consulting engineer working for them would need to have professional liability and so needs to be registered as a professional engineer.

River Blough (Swinerton) redirected the conversation back to DBI Sala or any of the systems that come in a box or set up. Speaking from experience, there was a situation wherein the parameters were reviewed, and it was very clearly stated that the parameters that were specified by that kit could not be met. So their company opted to use wire rope with the Crosby clamps and have an engineer review that system because their people did understand how to make that work without an engineer.

The way DBI Sala and some of these other companies stated it, the manufacturer's parameters are clear in stating what it required, and in this instance, it could not work in Swinerton's job situation. There are systems that work if Swinerton has competent people who know how to set up those systems and understand the parameters that are to be used. They work and will continue to work. But in situations where it is outside of those parameters and a horizontal lifeline must be set-up, that is a situation where someone who has the knowledge can set that up for their company.

The Chair asked a question if the companies make the kits to be Z359.6 compliant.

Mike Donlon (CONSTRUCTION EMPLOYERS' ASSOCIATION) responded stating this is exactly where the language of qualified person works so well, because it allows someone who's a competent, trained fall protection person to do a certain level of application, installing one of these systems within its parameters. But the suggested language requires a license when required.

When you get beyond those parameters just like Mr. Blough said, then you would need an engineer based on the definition of qualified person. The federal language just works 100% because it requires a registered engineer when you need one. It does not require one when you do not. He suggested that when the Chair does research on DBI Sala she talks to Werner, Guardian and some of the manufacturers to see what their intent is in the systems because, in the construction world for about a decade now, horizontal lifelines (kit system) have been extensively installed by our qualified people, tradesmen, who read and understand the instructions—just like ironworkers understand how to bolt together a steel structure. The engineer doesn't have to tell them how to do that. It is in the plans. It is in the instructions in this case. He advised the Chair to talk to the manufacturers and really look at what their thought process is on these systems.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that his concern with just specifying a qualified person that meets Fed OSHA or Cal/OSHA is that the bar is set very low.

For the qualified person definition, somebody could attend a four hour and eight hour class to become quote a “qualified person.” While you might be able to challenge it eventually legally, they are out there doing work thinking that they are doing well and they could be overlooking some very critical items.

In response to the gentleman from Swinerton, they might not be able to diagnose the difference between what situations they should be used and what situations they should not. He thinks Z359.6 allows that to be notched up, go above and beyond in a very positive way that is promoting health and safety, but not quite to the level of having a professional engineer in the State of California (unless there are other situations that necessitates a California registered professional engineer).

The Chair stated, in a situation that necessitated a professional engineer from and State of California, she could honestly say she knew enough to get herself in trouble. If she had to design something, and she is a qualified person technically, but in reality she is only a qualified person to have an intelligent or semi-intelligent conversation with members of the advisory committee.

Correction: *The Chair does not meet the criteria to be considered a qualified person, because she is lacking experience. The Chair completed a Qualified Person Training Course.*

Qualified Person, Attendant or Operator. *A person designated by the employer who by reason of their training and experience has demonstrated their ability to safely perform their duties and, where required, is properly licensed in accordance with federal, state, or local laws and regulations.*

River Blough (Swinerton) expressed his appreciation that members are having these conversations because it is very important, and he understands the complexity with the horizontal lifelines. Out of curiosity, he called his friend who is a glazer, working on a project in the Bay Area, and asked how many horizontal lifelines they have in service this morning? His friend replied he has about 18 horizontal lifelines set up that he moves once to twice a day. This is on one project, one trade. The purpose of the call is to bring this complexity into their conversations, to find out how often these systems are used and how much safer they are compared to the alternative, which would be deck anchors where you are drilling into concrete or beam straps that are attached to the bottoms of columns dragging a self-retracting lifeline behind them. He agrees that it is very important that horizontal lifelines are done correctly, and they are also important to the workers' safety given the complexity of what they're doing out in the field.

Matt Smylie (Ford Construction) stated that members are putting engineers on a pedestal, but they are not always be infallible. They can fail too, just like a qualified person might also fail. The use of trench plates or trench boxes is an analogous situation to the topic of discussion. These are engineer-designed products that have specific instructions on how they are applied, but they do have their limitations—where it is needed to go to another system, where it has reached its limitation and cannot be used because it is beyond the capability of the system. He believes that is at a depth of over 20 feet, where shoring has to be done by an engineer.

There are certain soil types where it has to be done by an engineer because the capabilities of a prefab engineered box or shoring system is not going to be capable as it is designed. It is beyond the capabilities of that in a system (like horizontal lifelines, where it is an engineered system). It is designed for certain applications. If the system goes beyond that, a qualified person looking at it would hopefully be able to catch the fact that this system is not going to work in this case and that an engineer needs to be consulted.

Jason Denning (Cal/OSHA) said he wanted to echo the comments from Mr. Kramer and the Chair regarding the qualified person. The qualified person language puts the onus on Cal/OSHA in enforcing it. In the field, Cal/OSHA would have to make a determination of what a qualified person is, and it can be a nebulous term depending on these kind of systems. It would be far better to have it called out to be a professional engineer.

As the other speaker testified, these are systems used very highly—18 on one site alone. AC members have to look at that as 18 exposures, that wasn't designed properly and a professional engineer rather than just saying engineer. A professional engineer has their license on the line, where an engineer does not, neither does a qualified person. They both have the liability lawsuit. They do not have a license on the line. He has been looking through the Z359.6 standard and could not find where it states that an

engineer is required so he asked for the specific section that stated that an engineer is required.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that he will follow up with Mr. Denning regarding the engineer part. He said it might be possible to differentiate between these and maybe classify them from a temporary and a permanent standpoint. If a horizontal lifeline is being installed in a permanent situation, then maybe maintain the Z359.6 requirement. But if it is being used in a temporary situation, then at a minimum it should have a qualified person requirement. Obviously, temporary and permanent must be defined, but that might be a better way. He was thinking about what the gentleman from Ford Construction brought up—maybe differentiate temporary as systems that are designed, installed and supervised by a qualified person; and a permanent system can be in accordance with Z359.6 (maybe add the professional engineer requirement or not).

Robert Moutrie (Cal Chamber) stated that he believes Mr. Blough's comment as to the number of the uses on the site. If there are 18 on a site and they're moving steadily, there has to be feasibility to use these products and move them and do that routinely. Going back to the problem of engineer availability as a concern, it is clearly necessary to have that issue addressed.

The second thing he said regarding a professional engineer versus normal non-professional engineer. He understands the difference as purely a matter of professional engineers carrying their own insurance versus the business. If the business is going to face liability for the mistake, that motivates businesses to do as well as they can in these cases.

Lastly, he asked members to be very clear on exactly what language changes they want in their comments, so they are not general. For example, I am in favor of "A" and "B." He wants to make sure to keep in mind to make very precise comments for efficiency.

Mike Donlon (CONSTRUCTION EMPLOYERS' ASSOCIATION) said that he thinks Mr. Kramer has come up with a very eloquent solution to this. A system designed from scratch is different than installing a pre-engineered system. He is in favor of splitting requirements between pre-engineered and a designed system. For the pre-engineered system, a competent or qualified person doing it and the federal language of qualified person would suffice. For the designed systems, he agrees with the requirement to be designed in accordance with Z359 by a registered California engineer.

He agrees with Mr. Smiley that registered engineers should not be put on the pedestal. There was a registered engineer when he started with Cal/OSHA that would sign any excavation drawing if you gave him enough money.

Mr. Donlon asked for a show of hands as to how many California registered engineers are in the room. He noted 3. Then he asked who's qualified to do fall protection? Then he asked, whose insurance would allow them to do fall protection.

Engineers are limited not by just qualifications. His insurance would not allow him to do engineering. He is restricted from doing that specifically because he is a professional engineer and he would have to pay like four times as much to be allowed to do this kind of work. His insurance would not allow him to do engineering.

Jason Moore (CS Caulkins) stated that his insurance allows him to do engineering. Mr. Moore is insured as an engineer. Mr Donlon is insured as safety consultant.

George Lawson (Cotterman Co) asked the opinion of the other members if the word "designed" can be replaced by "certified" per (b)(13)(A): "(A) Is designed, installed and used under the supervision of by a professional engineer currently registered in the State of California and experienced in such a design; and."

He asked, would changing design to certified resolve the situation and would it satisfy everyone involved especially the Cal/OSHA records?

The Chair redirected the conversation and asked Mr. Kramer for comment. The Chair stated that she understood Mr. Kramer's comment as a way to differentiate where a professional engineer would be required by using permanent versus temporary as a criterion. She asked, would an example of permanent installation be an installation in a factory, where workers use it routinely and would those have to be inspected and maintained to make sure that the workers can rely on that horizontal lifeline protection at all times. She also asked if the temporary ones are the ones that are installed on construction sites.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) replied yes, and it could also be used on general industry sites. For example, they have a pit that has floor plates that get opened up. And so, they would take a horizontal lifeline and string it across the opening to provide some protection from falling off the edge, but it might only be installed for a week at a time and then taken down. Maybe it is repeated every three years or something like that.

The temporary one would have some sort of a time limitation on it. It would also apply to general construction where you are constantly moving it. It is going to be here one day, but two months from now it is going to be in a different location. He is suggesting putting some limitations as to how long it could be in place.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) wanted his comments to capture his understanding of the discussion. He stated that the discussions were about buildings and structures and things that are existing and things that are going to

be there for the most part maybe temporarily. Early in the meeting, it was said that this could be the basis for future changes to construction later, and now there were comments expressing concerns that bleed over into construction application, which will not work because it is such a dynamic thing.

He explained that the language he is suggesting will not be for the temporary part. His proposed language was along the lines where the application of the manufacturer's requirements do not work, the employer shall have a professional engineer approve the application of the design that is beyond the manufactured application. Some of the members are saying follow manufacturer's requirements, when it gets to a point where that won't work in the application, then get an engineer to say, here is what we are going to do and we are going to stamp it and so on. We are to apply it and stamp it. It is already so done.

His proposed language is an exception to subsection (c)(1), which states personal fall protection systems shall be used in accordance with the manufacturer's instruction. One of the criteria for regulatory text is to avoid duplication. The proposal is an exception because the manufacturer has this system and then the attachment or the application needs to go beyond. The engineer doesn't have to redesign all these other components that are already done by a non-California registered engineer. You're just talking about the attachment or something else that limits it, and you need to come up with the system around which is what was explained.

He also suggested another subsection, along the lines of where the system is not manufactured: you have to have a system designed by a professional engineer, where you do one from scratch like the way it was 15 to 18 years ago (no manufactured components, not a kit system). Back then, it cost about a million dollars for one system by the time it was all done. He understands money is not always something that is talked about, but it is a big issue. His suggested drafting a proposal that limits where an engineer would be required, designing a whole system. The engineer needs to be involved on the portion where a manufacturer says you are trying to apply it to the connection point. Then an engineer is needed to say, here are the loads from the manufacturer, can this work when it needs to be attached to this piece of metal or this piece of concrete or whatever.

The Chair proposed an idea to require the competent person to assess if the situation or application calls for one of the kit systems or one that must be designed by a professional engineer. Under the Injury and Illness Prevention Program (IIPP) program, the employer is required to evaluate the hazards. The competent person must be competent enough to know the limits of their qualifications.

The competent person will be charged with making the decision to determine if their own qualifications are enough to install a particular system that the employer needs for that application. The competent person must be able to judge for themselves. They have to

be able to say, this work requires an engineer, not me, because this job requires a far more complicated system than a DBI Sala kit system. *Correction: The Chair meant to say qualified person. Note: A qualified person can also be the competent person.*

Matt Smylie (Ford Construction) stated that the discussions have been about two separate applications here: (1) a construction application or an intermittent application at a general industry facility and (2) a permanent application at a general industry facility.

The temporary ones are going to be for intermittent activity and/or construction which has a time limit, and it's going to be covered under the Construction Safety Orders.

The applications that might need a professional engineer are for permanent systems installed at a general industry facility. He suggested that the language should differentiate between construction or intermittent activity at a general industry facility versus permanent horizontal lifeline system (permanent fixture) at a general industry facility, the latter of which should be designed by somebody who's a professional engineer.

The Chair reminded everyone that falls account for roughly 35% of fatalities in construction. The Chair acknowledged that she did not crunch the numbers as to how many of them were from horizontal lifelines. However, falls occur at a lower rate in general industry as compared to construction, and the falls for general industry were from the building maintenance category.

Yancy Yap (Cal/OSHA) commented that he disagrees with drawing a line between general industry versus construction. A fall from an improperly designed horizontal lifeline is just as hard in a construction site as in a general industry setting. He disagrees with having a non-registered professional engineer picking components from the shelf on a construction site versus requiring a professional engineer in a general industry setting.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that he agrees with Mr. Yap fundamentally. He prefers that you have somebody who is dually registered as a professional engineer, but he does not think other members would agree with him. His aim is to move the ball forward and at a minimum meet the federal mandates for the temporary systems and then move the ball forward on the permanent systems that are going to be installed at the worksite for a lot longer. For a financial reason, it would help avoid a permanently installed system from being replaced due to poor design. He believes that Mr. Smiley's suggestion would move the ball forward and thinks it could get some good traction.

In response to Mr. Denning's questions, the scope for Z359.6 2016, section 1.1 states the standard is intended for engineers who are trained as qualified persons and have

the expertise in the design of active fall protection systems. He hopes that this clarifies the engineering part. The 2009 editorial comments did state in most cases the engineer should be a professional engineer. However, there are some exceptions where it is permissible per a local building code for an engineer who is not registered with the state or governing body to perform engineering and strongly recommended that if this work is being performed as a consultant for a client, that the work be performed under the supervision of a professional engineer.

River Blough (Swinerton) wanted to clarify his previous comment about one project, where there was a lot of horizontal lifelines for just that one project. He cautions that if the requirements become so difficult to follow, employers are just not going to use it. Employers are going to say that this is too complex and are just going to go back to putting the yoyo around the column which is totally legal and within their rights. He cautions against creating regulations that causes employers to not use the horizontal lifelines option because it's going to be expensive especially for the smaller contractors.

Jason Denning (Cal/OSHA) acknowledged Mr. Kramer for giving him the section in ANSI. He said he believes that the language in ANSI is unenforConstruction Employers' Associationble. The language would not require an engineer even if it referred to the standard. It would not require an engineer using "should" and "this is intended." It has to specifically say that it is required to be designed by an engineer or else it would not be enforConstruction Employers' Associationble.

The Chair asked for Mr. Denning comments regarding the DBI Sala kit system where the components and instructions are designed by an engineer, and if the installation and the application on that specific site is not designed by an engineer.

Jason Denning (Cal/OSHA) replied that he thinks that the committee can explore an engineer installing it and then including within, for that engineer, an acknowledgement of that other standard, the reaction forces necessary, etc. He thinks the committee could expand on that. It is a permitted practice in engineering for something to be given to someone else, for example, a foundation is designed but is based on calculations by others. Then the engineer does stamp that design with the forces that were provided by their engineers.

Matt Smylie (Ford Construction) asked if there are statistics on serious injuries or fatalities as a result of properly installed and properly used application systems, or if it is the case where the people injured weren't wearing anything.

The Chair replied that if they are properly applied, they would not be a fatality and so that would not be something that would be captured in the statistics. The statistics are from fatalities that happened at work and are further subdivided to fatalities that happened due to falls.

Matt Smylie (Ford Construction) then went on to say if an engineered system that is provided by a supplier and properly installed without the oversight of a professional engineer—but it has been designed by a company properly, installed properly and properly applied—then how many serious injuries and fatalities are the result of that application? If there is none under that or a very minimal amount, then this is the de minimus? He inferred that the lack of data was because the systems have proven themselves to be effective. The failure is in the application of them or the understanding of how to properly install them under the manufacturer's guidelines, and that is where a qualified or competent person overseeing the system comes in. We all have all these things including pieces of machinery that come with instruction manuals on how to use them.

The Chair replied that there could also be issues with the manufacturers of other products, not just fall protection. She cited rebar caps and rhetorically asked how many of those are manufactured and how many of those failed. As said, engineers are not perfect; manufacturers are not perfect. There are products from manufacturers from many different places, some coming from overseas. Simply stating following manufacturer's instructions does not solve our situation here.

Rinaldo Edmonson (Marathon Petroleum) stated that he is in agreement with Mr. Kramer and Mr. Smylie. Moving forward, he does not want to lose the initial idea.

Mr. Donlon earlier commented about these systems that are pre-made, and that was just one example. There are pre-made systems that are seriously complex as Mr. Kramer had mentioned earlier.

While discussing temporary versus permanent, it can be separated as requiring a qualified person versus a professional engineer. There are also complex systems out there that are coming off the shelf that definitely need to be addressed as well.

The Chair agreed and that was the reason why earlier she asked if there is a complexity that could be defined, because she did look at other ones and some of them are really quite complex.

Mike Donlon (CONSTRUCTION EMPLOYERS' ASSOCIATION) acknowledged that there is a mix. He agrees with Mr. Kramer that permanent fall protection systems should definitely be designed and installed under the supervision of a registered professional engineer.

The Chair wanted to clarify if there was a consensus that permanent horizontal lifeline installations be designed by a California registered professional engineer.

Rinaldo Edmonson (Marathon Petroleum) commented that he thought there was a consensus on the complexity as well being designed by a professional engineer.

The Chair replied that the committee has not defined what that complexity is.

Mike Donlon (Construction Employers' Association) suggested language stating that pre-engineered systems be designed to meet ANSI Z359.6 and for temporary use may be installed by a qualified person. Those are the systems where a qualified person must be permitted to install in order to make them useful.

Mr. Blough said if employers are not given this tool, they are going to use a tool that does not allow as much safety. Employers are going to have a single tie off point. They are going to have swing and all kinds of other problems. These horizontal lines create such a good thing. Talk to the manufacturers. These systems were designed to be installed by a qualified person. They did the engineering so they could sell it and have it installed by a qualified person. That was the whole intent of developing these systems.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) added to what Mr. Donlon was saying. He stated that it can't be used as a threshold because a lot of time could be spent talking about it—the number of spans, if there are corners, if the angle changes—there is a lot of complexity and in the end all the variables cannot be captured.

It would be very challenging to be able to enforce some level of complexity definition just because there are so many different variations, but if we put it on the competent person doing the assessment that might be a good threshold. Again, it flags complex systems when they are identified during the assessment, and you need to go to the second level.

The Chair called a break and asked the members to develop language that combines the ideas that Mr. Kramer talked about.

Yancy Yap (Cal/OSHA) asked if Mr. Denning should come up with proposed text, and the Chair replied yes.

After the break, there were three ideas for proposed texts. Two were from members who attended the meeting in person, and hopefully the two can be merged together. Another proposal came from Jason Denning (Cal/OSHA), who attended virtually.

Text from **Michael Donlon** (Construction Employers' Association)

11(A) Permanently installed horizontal lifeline shall be designed, IAW Z359.6-xx by a professional engineer currently registered in the State of California and experienced in such a design.

(B) Pre-engineered lifeline systems **in temporary use** shall be designed IAW Z359.6-xx and installed by a qualified person. The qualified person shall evaluate

the installation to ensure it conforms to the manufacture's requirements. If not, the installation of the system shall be planned and installed under the supervision of a professional engineer currently registered in the State of California and experienced in such a design.

Text from **Thomas Kramer** (ANSI Z359 Chair, LJB Inc.)

For horizontal lifelines (HLL) systems installed on a temporary basis (define temporary) and those systems determined by a competent assessment to be simple, designed, installed, used under supervision of a QP (Z359.6 for design).

For HLL systems installed on a permanent basis and those systems determine by a competent person assessment to be complex, California PE (Z359.6 for all).

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) commented on Mr. Donlon's proposal. He asked to delete "h" because there is an H style horizontal Lifeline which is very complex and definitely does not want to go down that route. He also asked for clarification in (A) where it states "shall be designed." He assumed it meant design installed and used during supervision. He also thinks that (B) should also be clarified.

He also cautions on the use of the term "pre-engineered" in (B), because the term has to be defined. Defining a pre-engineered system becomes very complex. Nearly all horizontal lifelines that are sold by manufacturers are pre-engineered. How much engineering has to go on in the field is to be determined. This is the reason why he thinks for temporary installations the competent person should be able to make a site-by-site decision. He agrees that the qualified person evaluate the installation. Since the first sentence says, "installed by qualified person," then the second sentence where it says "evaluate the installation" appears somewhat redundant. If the installation is not/will not be in accordance with the manufacturer's requirements, then he agrees that it shall be under the supervision of the engineer.

Mike Donlon (Construction Employers' Association) stated that he meant to say "pre-engineered lifeline systems in temporary use[.]"

Jason Denning (Cal/OSHA) stated that there seems to be a lot of terms in there that can be very gray and would need to be defined. For example, what is temporary? What is permanent? Permanent may be a little clearer.

He also does not see the difference between a permanent and temporary system and asked why not come up with language to cover both. Hopefully maybe the other committee members might suggest language to cover both. He said he proposed language that is a little more concise. It is shorter, it mentions nothing about temporary

or any of the other kind of nebulous words that the Cal/OSHA will have difficulty enforcing.

Matt Smylie (Ford Construction) suggested using the word “certified” rather than “pre-engineered” or “pre-engineered and certified.” Certified meaning certified under the ANSI standard.

In response to Mr. Denning’s comment, he stated that there is a standard interpretation on what is considered temporary under Fed-OSHA dealing with fall protection. Temporary means that the duration of the task the worker performs is brief or short. Temporary or brief tasks generally include those that the worker is able to perform in less time than it takes to install or set up conventional fall protection (Federal Register 82613). A better term to be used here would be “infrequent”. Infrequent means that a task or a job is performed only on occasion when needed, on occasional basis or at a sporadic or irregular intervals, which could be once a month, once a year or as needed. He suggests that the term “infrequent” might be a better term. Under temporary, you don't get within 15 feet of the edge roof fall.

Jason Denning (Cal/OSHA) replied, whether it is temporary or permanent, workers are still exposed to the same hazard. He thinks that the focus should be on the actual design of the system. He believes that temporary and permanent should fall under the same standard.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) asked Mr. Smylie to define what he means by certified according to the standard? The literal term of “certifies” typically means a guarantee. For example, for certain public documents, he has to certify that he read this document and so forth, meaning he is guaranteeing that he read the document. Certified per Z359 means that there is documentation that it meets the system.

Text from **Jason Denning** (Cal/OSHA)

(A) Is designed by a professional engineer currently registered in the State of California and experienced in such a design. When components of the HLL are supplied by a manufacturer as a complete subsystem, they shall meet the requirements of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems, and the engineer shall design the remaining portion of the system that comply with the manufacturer’s design requirements.

(B) Is installed, and used under the supervision of a qualified person; and

Mike Donlon (CONSTRUCTION EMPLOYERS' ASSOCIATION) reiterated his request to contact the manufacturers and ask them what their intent is. Is their intent for these systems to be installed by a qualified person? They do not base everything on needing an engineer. He said it is the same as an ironworker bolting together a connection of steel. The engineer puts it on the drawing; the ironworker understands the drawing. In this case, the manufacturers put in the instruction, the engineer (from the manufacturer) who designed it drafts the instruction and the qualified person understands the instruction and installs it in accordance with that.

Robert Moutrie (Cal Chamber) advised the members to keep the language simple and clear. There were discussions about the difficulty in terms, and putting in the term complete subsystem seems to potentially create more issues. It seems like the members focus on Z359.6 as a standard for design and then focus on qualified person installing and using that is workable and seems in line with kind of products are intended.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that when components are supplied by a manufacturer, there is not necessarily a quality basis related to them. If Z359.6 is referenced and the entity is required to show documentation to the compliance officer that it meets Z359.6, then there's a quality level. They are going to be able to do their own due diligence to make sure that it is a quality manufacturer. There are a lot of manufacturers, and there is the risk of having manufacturers just pop up supplying these components that do not necessarily meet anything—that people are just simply just applying them to fall protection systems without any thought or regard. He thinks having the requirement of the Z359.6 standard requires that the person designing the system has done some research to make sure that the products do meet a standard when it is available. But when there is no standard, they have done the research to make sure that those system components are fit for use in that system.

Rinaldo Edmonson (Marathon Petroleum) said that Mr. Denning's proposal does not address the idea of having a competent person to do the installation correctly and oversee that use. All he is talking about again is that the engineer shall design the remaining portion of the system.

Jason Denning (Cal/OSHA) responded that he wrote this text under the assumption that the installation language under post AC text (13)(B) was also going to remain. The installation and supervision would still be under the care of a qualified person, as proposed subsection (c)(13)(B), and that is the reason his proposal only addresses the design.

He agrees with the comment regarding the manufacturer should be held to a higher standard. That is an excellent point, but it should probably instead be, "the complete subsystem meet the requirements of ANSI Z359.6." As far as the definition of subsystem, ANSI defines subsystems and that was where he got that term.

ANSI Z359.0-2012. Definitions and Nomenclature Use for Fall Protection and Fall Arrest

2.87 Horizontal Lifeline Subsystem. An assembly, including the necessary connectors, comprised of a horizontal lifeline component and, optionally, of: a) An energy absorber component or, b) A lifeline tensioner component, or both. This subsystem is normally attached at each end to an anchorage or anchorage connector and may also contain one or more intermediate anchorages. The end anchorages have the same elevation.

The Chair asked if a portion of his proposal is missing.

Jason Denning (Cal/OSHA) replied yes. He only wrote text to address the design portion based on the original text proposed. Yesterday, there was discussion and a change in the proposal about the installation and supervision by a qualified person, which was separated to (13)(B). At the beginning of the meeting, he stated that the supervision and installation could be by qualified person.

The Chair clarified his position as reflected above, and Mr. Denning replied yes. Mr. Denning added “shall meet the requirements of ANSI Z359.6-2016 Specifications and Design Requirements for Active Fall Protection Systems, and the engineer shall design the remaining portion of the so there's a system and”

Mike Donlon (CONSTRUCTION EMPLOYERS' ASSOCIATION) asked what is the remaining portion of the system? This is a system that is designed to be installed by a qualified person at this point. So he does not understand this remaining portion. It is a complete system that you attach to the structure according to the instructions.

Jason Denning (Cal/OSHA) responded stating that often times these systems are sold as a line that may include a decelerator pack, connection points for the horizontal lifeline itself. Those still have to be installed onto a structure, and the engineer is going to have to design those anchors on the building. This is the law on the installation. This is not just talking about installation, but it also talking about design.

The Chair stated that as required by the rulemaking process, the committee is required to explore alternatives. Cal/OSHA's proposed text is Option 1. There were other proposals drafted by the members who attended in person, and that will be Option 2. They will be given a chance to finalize their proposal. The comments on Mr. Denning's proposal will be included in the minutes.

Dan Leacox (Leacox and Associates) commented that the difference between the two proposals is one dismisses the difference between temporary and permanent. He stated that he thinks it dismisses a real safety factor, which was raised earlier, which is that people have choices. When you have temporary situations, to the degree that you

burden the use of that system, you change the equation for whether or not it gets used. He believes that was the point Mr. Blough was making earlier. You might get them to shift over to other systems that actually in the end are less safe. He believes that consideration of permanent versus temporary is a safety factor, and ignoring it ignores things that need to be considered in optimizing what really happens out in the field safety wise.

Jason Denning (Cal/OSHA) replied that he still does not see the difference between temporary or permanent installations of horizontal lifelines. They still have to be designed to take these forces, and horizontal lifelines can vary greatly and be very strong forces. He does not see why they would not be designed by an engineer in any case whether temporary or permanent. The hazard is exactly the same, and why would anyone not want that designed by an engineer?

Dan Leacox (Leacox & Associates) responded that he concedes that those are not the only choices. There are other options in play, and folks can change their mind as to what option they use based on what is being added to the requirement.

Jason Denning (Cal/OSHA) asked Mr. Leacox to clarify what he means by “choice.” Choice for what—for the design?

Dan Leacox (Leacox & Associates) answered it is to use something else other than the lifeline system. He said that maybe Mr. Blough can reiterate his comment and experience about the types of systems somebody else might use.

Jason Denning (Cal/OSHA) replied that his proposed text only applies to horizontal lifelines.

Dan Leacox (Leacox & Associates) said yes, but the choice is a factor in what happens safety wise. Out in the field, trying to promote real safety, making something more usable and therefore used more often helps with the safety.

Jason Denning (Cal/OSHA) stated that he understood his comment as it might limit someone's desire to use a horizontal lifeline, because it's more difficult to install than something else.

Dan Leacox (Leacox & Associates) replied yes.

Jason Denning (Cal/OSHA) said that these are kind of different animals than a lot of other systems. There are more variables, and that is why he thinks it was really important that someone with very high qualifications actually designed them.

Mike Donlon (CONSTRUCTION EMPLOYERS' ASSOCIATION) added to what Mr. Leacox was saying. When developing regulations, they have to be feasible to implement. If they are not feasible to implement, then either you are going to use a less safe method or the smaller employers that are not as conscientious are just going to not do it. There are a group of people in the room here with real-world experience. All respect to Mr. Denning who is a very smart guy. He does not have to make this work. He is not the employer that has to put this into play. The whole idea of the manufacturers coming up with these systems is to make it easier for the end user to understand how to install it. Manufacturer's instructions tell you how to install the end points. They tell you what you need to do with that. It is just like an ironworker bolting something together. You do not need the engineer right at the point where he is putting the bolts and telling them how tight to torque them since that is in the specifications. He believes that this is the same kind of thing. They have really made these things designed to be installed by a qualified person.

He stated that he is a qualified person, and his language differentiates the requirements. When you are putting in a permanent system like in a factory or warehouse or when he designed it to work over aircraft. Yes, that should be designed by a licensed engineer. It is going in, it should be inspected regularly, according to the ANSI standard. He thinks it is every six months. He cannot remember. These kit systems are designed for the end user with a certain level of knowledge—a qualified person—should be able to install. There are not enough engineers. The only place you find engineers qualified for what has been discussed are working for the fall protection companies, and it is a very limited number. You cannot go down to your local civil engineering company, Joe Civil Engineering, because they do not have the fall protection experience.

River Blough (Swinerton) reiterated his fear that the industry may lose a component that is very useful. Some of the other very large contractors that can afford to have individuals on staff that can understand this and maybe try to make it work. The real life problem is most of these contractors out there do not have the luxury of having somebody who can sit down, piece this together and make it useful out in the field. Swinerton can, and they do. But the majority will not have an individual who can figure this out.

Kevin Bland (Ogletree, Deakins, Nash, Smoak & Stewart, P.C.) stated that he is going with this concept because he thinks this is one thing that is kind of threaded through here with California Professional Engineers. He used the analogy of car seats.

You buy a car; the seat belt is already designed probably not by a California registered engineer, but it already has been determined it meets ANSI and does the things you rely on. Then you have to connect it the way the instructions say to connect it. If it does not connect, then there is an issue. It is kind of the same concept here.

There are a lot of things that are manifesting, and this goes through the entire world. There is a lot of very complex safety things like the forces on the seat belt, in the car, all those things. As consumers and users rely on the manufacturers' design criteria and the criteria that goes into that design, but are able to use it. It is the same thing with the car seat. It is designed. He stated that we do not and cannot have a professional California registered engineer redesigning or confirming the design for a General Motors seat belt. Riders just have to connect it the way they say. And it is the kind of concept members are struggling with here. There are a lot of manufactured things that have complex engineering in them that is manufactured for this purpose. He stated we have to make sure we are using it, but we do not need a professional California engineer on that design portion.

River Blough (Swinerton) added to Mr. Bland's comments. He said we all know how to buckle our seatbelts, but we rely a lot on the manufacturers to give us the quality baby seat that we put our children in. We put those in because we follow the directions, and we trust it. He thinks that there is a lot to be said with trusting where we are getting these things as long as we have the parameters from different entities like ANSI for instance.

Jason Denning (Cal/OSHA) stated that everyone is commenting that we are asking a California engineer to redesign this system, and that is not the intent unless they have to design it from scratch. The intent is if there is a lifeline that is designed completely from scratch, then an engineer would do that. If a system comes from a manufacturer who has designed it with forces, etc., it is only going to be the anchors to the structure that have to be designed.

Yes, it has to be installed by manufacturer's instruction, but the manufacturers do not have the information for all of the buildings, structures, etc., on which these are being installed. Someone has to look at that, and it cannot just be "you" that has to bolt it to a two-by-four. No. He asked, what is that two by four attached with, how large is it? Why not a four by six. You can't really do that. So an engineer is going to have to do that in order to ensure that the lifeline is going to be able to be supported properly.

The Chair asked if the proposed text meant that the engineer has to verify the capacity of the anchorage. Is that what you're saying?

Jason Denning (Cal/OSHA) replied, yes, correct, but he had to craft language open enough so if there were other parts of the system that indeed needed to be designed—that did not come from a manufacturer that had already tested it—then they are going to have to design those parts too.

For example, if there were just the line or something and they bought it, like a deceleration pack from someone else, and put that together, then they would have to design it, because that did not come as a system. But if everything came as a system

and everything was there except the anchors that they had to place on the structure, then all they would have to do is design the structure anchors. That's why he kept it that way. The "remaining portion is whatever did not come (is the subsystem) from that manufacturer? They would have to look into the rest of it if necessary.

Robert Moutrie (Cal Chamber) appreciated the Chair's intent to be done with comments because we all know where we are. He also appreciated the Mr. Denning's clarification of exactly what he meant.

But he thinks the concern that Mr. Donlon and others were sharing, from a feasibility standpoint, is if the standard says you must always have an engineer to install this, then you are ignoring the argument that well-designed instructions and a qualified person knowing it are safe and can work. Requiring an engineer at every one of these effectively to always design those bolts or a check raises the same feasibility problem we were already discussing. So he doesn't know whether that resolves the concern from the committee.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) stated that we need to remember that when the building codes apply and involve a general contractor or there is an engineer of record, they are very likely to cover their own liability. They are going to check with the engineer of record who will be a professional engineer in the State of California to do that. And in other cases where the building code is required, it is required to be done under the supervision of an engineer. He thinks it is somewhat redundant, and he thinks we are okay to take out the explicit requirement for a registered professional engineer in the State of California for the temporary cases.

Mike Donlon (Construction Employers Association) said these anchorages, such as a concrete anchor, comes with a specification. So the installer knows the strength. It is engineered to be put in concrete according to the instructions, and the manufacturer tells you what strength that will meet. He said that it doesn't take an engineer to understand the specifications.

Action Item: Ask Mike Donlon (Construction Employers' Association) to provide the Chair a copy of the instructions of a horizontal lifeline system he was referring to when he made this comment.

He said he looked at the business and profession's code, the Professional Engineers Act, and it lists what civil engineers can do—and fall protection is nowhere in there. Civil engineers are allowed to offer construction project management, but it specifically exempts employee safety within that. He said that even the business profession code recognizes that civil engineers are not experts on employee safety.

He said that there are specifications on the different kinds of anchors. The manufacturer informs the user of the specifications for the attachment point. An anchorage is

purchased (probably from the manufacturer) that meets that specification. It is then installed in accordance with the instructions. It is all engineered out for the installer. He revisited his earlier analogy of an iron worker. The engineer does not have to direct each bolt being torqued, and that is kind of what we're getting down to here.

Jason Denning (Cal/OSHA) responded that he disagrees because the horizontal lifeline was not included in the design of the building unless they did it ahead of time perhaps. Installation is different than the design. Mike Donlon said to install it per manufacturers' instructions, and a manufacturer might say 3,000 minimum, 3,000 psi concrete or something like that. However, the structure itself may still not take that load even though it is 3,000 psi concrete, or maybe it is a four by six but did they tell you how long it is? Engineers are going to have to do that anyway.

In the field, even if it says a qualified person, Cal/OSHA is going to look at that anchorage point and ask: who designed the anchorage point, who would analyze the structure to ensure that it is going to take this? It is not just installed per the manufacturer; who actually looked at this structure and said it would take the force of this horizontal lifeline? The person who evaluates that is not going to be a qualified person who is not an engineer. An engineer is going to have to do that because otherwise they wouldn't really meet the qualifications to do that.

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) said that he agrees 100% with Mr. Denning and the concept he is proposing. He's had this discussion for the past 20 years and thinks it gets down to feasibility. How we can move the ball forward; the requirements that we are putting in there will make safer systems out there. It will not address every single circumstance. But let's kind of compromise on this, not for the sake of lessening worker safety, but realize that it is going to take a while for the industry to catch up.

In five or ten years, they should have this conversation again, and he will be the first one to buy a drink to get this going because he understands where Jason is coming from. He completely agrees.

Mr. Kramer would even want to put in that the professional engineer has to be a certified safety professional, but we are not going to be able to get a consensus on that. Just a thought and a perspective.

Matt Smylie (Ford Construction) concurred with what Mr. Donlon said about the design of anchor points. If it's coming as part of a kit, the design has been engineered into it. If you look at some of the instruction manuals on these things, they are pretty robust. They tell you exactly what you can and cannot use and how it needs to be fitted. Frankly if you are attaching it to a structure that cannot support a fall, he does not want to be in that building anyway.

Action Item: Please provide a copy of the instructions of the horizontal lifeline system being referred to when this comment was made.

The Chair called for a break for lunch and to be back here by 12:30 PM.

The Chair asked if Option 2 was a group effort to bring the ideas from the people in the room together. Not every single person in the room participated; the draft text is not just from one person.

Discussion on Option 2 (consolidated with Mike Donlon's (CONSTRUCTION EMPLOYERS' ASSOCIATION) proposal)

(A) Temporary HLL systems (defined as 3 months usage or less) purchased as a complete subsystem, and will meet the following requirements:

a. Temporary HLL system ~~will~~ **shall** be designed in accordance with ANSI Z359.6-2016 **documentation required by section 3 will be maintained and readily available on site**

b. Temporary HLL systems ~~may~~ **shall** be installed and used under the supervision of a qualified person.

c. If a qualified person determines that either (1) assessing the design's suitability is beyond their qualifications, or (2) the HLL system cannot be installed pursuant to the manufacturer's requirements, a professional engineer is required.

~~d. The temporary HLL design shall identify the qualified person, the address location and building location of each HLL temporary design, all specific components shall be identified including the specific anchor components. This document shall be readily available on-site.~~

(B) Permanently installed HLL shall be designed, ANSI Z359.6-2016 by a professional engineer currently registered in the State of California and experienced in such a design.

HLL systems shall be installed and used under the supervision of a qualified person.

Robert Moutrie (Cal/Chamber) introduced the draft proposed text. Option 2 goes beyond the federal requirements but does not get hung up on the feasibility issue and availability issue of having an engineer at every single installation of these and try to acknowledge it.

For permanent installations, it has to meet ANSI Z359.6 designed by a professional engineer.

For temporary systems—which he thinks deals with the issue of horizontal lifelines moving all the time and for short durations—those installations are still required to meet ANSI Z359.6, but a qualified person can do the installation and not have that engineer coming to check the bolts. They also included a release valve that if a qualified person looks at it and says, well, I cannot figure this out or this works here, or how this applies or I do not think I can assess that right. Not just that it does not apply, but I do not think I can assess that. That is the release valve where now, if they go to the employer and say hey, I am not sure how to make this work. We do not want the employer to say, well, you are a qualified person. I am doing it as a release valve so they can say I am not sure how this works and then a professional engineer has to be contacted.

So that was the goal, and he thinks overall it is harsher than whatever you want to use compared to the federal standard but still maintains the feasibility that we were concerned about.

The Chair thanked everyone for all their work. She appreciated committee members working together to craft language. The Chair solicited comments to edit the text.

Jason Moore (CS Caulkins) compared the permanent versus temporary text. Because (A)(b.) is not in (B), it almost appears that permanent installations do not need to be installed and supervised by a qualified person.

Robert Moutrie (Cal Chamber) responded that was not the mission, and we can include that under there. It was not the intent to remove qualified person on that side. It was more the distinction he was trying to draw. He thinks much like Mr. Denning, He failed to include that properly but did not mean to remove that obligation.

The Chair asked to replace “may” with “shall” because it is regulatory language.

Jason Moore (CS Caulkins) had an editorial comment to change under (A)(a.) and replace “will” with “shall.”

The Chair asked if there was a consensus for the three months under (A).

Jason Moore (CS Caulkins) asked how the three months was derived. How did we come up with the three months? What's the rationale there?

Rinaldo Edmonson (Marathon Petroleum) stated that in their industry, most of the things done using horizontal lifelines are done during turn around work. Anytime you

use routine, it is a permanent setting right? Turnaround work is usually 60 days to 90 days.

Mike Donlon (Construction Employers' Association) said they talked to Mr. Edmonson and asked what a temporary maintenance cycle is going to be, and it usually is somewhere between one month to three months depending on what that work entails. They looked at it from a plant operations stand point.

Yancy Yap (Cal/OSHA) responded that turnaround is the busiest time that a particular unit will have. There would be a lot of exposures if indeed members choose to go with that option.

Being an enforcement agency, Cal/OSHA follows the paperwork because whenever there is an accident, all of a sudden everybody leaves the site and there is nobody to follow a particular design. He made it clear that he is not vouching for Option 2, but if members choose to include this in the regulations, he suggested to add (A)(d.) that reads something to the effect of the "Temporary HLL designs to identify the qualified person, the entity with which that person works for, the address location and building location of each temporary HLL design. All the specific components of the temporary HLL shall be identified including the specific anchor component." He would like to include something to that effect.

Jason Denning (Cal/OSHA) stated regarding the Option 2 language, he had a couple of comments. For (A)(c.) which should be (A)(3.) "for the qualified person determines," he suggested "if the design of the HLL is beyond the qualifications of the competent person" rather than "the qualified person determines" they are determining themselves. This should just be if they are not competent and qualified to do this, rather than them determining it which adds another layer of nebulous language. How do you enforce that if they did not determine it? It should be more that the qualified person is not qualified for the design.

At the end of the sentence in (A)(c.) where it states, "a professional engineer is required," he asked, for what? He stated that it should state, "required to design the system" or something like that if they are not sure what the Professional Engineers is require for.

Yancy Yap (Cal/OSHA) suggested to add the requirement he proposed in (A)(d.) "should be available on site." That way if Cal/OSHA were to show up on-site they would have the ability to match the components to what is actually in the system and be able to identify the HLL and this document shall be available on-site.

A member made a comment to add "on-site or readily available," so that it can be available electronically.

The Chair asked members to wait until we finish adding the text and then we will go through the proposal systematically.

The Chair asked Mr. Yap for the reasoning behind his suggested “d.” Is it because if you look at the system, you want to know, who was responsible for overseeing the installation of it, the use of it and whatever is in place is what the qualified person intended to put there and that nobody swapped out components and things like that, is that correct?

Yancy Yap (Cal/OSHA) replied that is correct. In addition to that, he wants to know if somebody were to fall, what the loads are on the anchors and the HLL which would be the same load. He would want to know what loads would be on those users, as well as what fall clearances they had. That way if the paperwork is available, then an inspector could look at that paperwork and verify that they had adequate clearance and that the anchors are not going to collapse under the load and that the qualified person for this temporary horizontal lifeline has determined that it would be adequate.

Michael Donlon (Construction Employers’ Association) responded to proposed (A)(d.) by stating that the idea is just a bureaucratic nightmare. That is a ridiculous amount of paperwork for a temporary lifeline. What he would like to see from California is how many falls have been caused by failure of a horizontal lifeline? He has not seen any data on this. Where is that data that we are supposed to be looking at? We are making this much more complex than the federal regulation that just says “competent person,” and we really need a reason to be doing that. We are going along with this, but where is that on the falls? Because horizontal lifelines have failed throughout the state.

Yancy Yap (Cal/OSHA) replied, when we have an accident with somebody that is attached to a horizontal Lifeline. Usually, the cause of the accident is undetermined because we do not know which component failed because there was an improper design and that is why we are trying to push towards educating users of HLLs having design systems.

Mike Donlon (Construction Employers’ Association) replied that his question was, where are these accidents happening? How many have happened? He has not heard of a single one. Do others know what the numbers are on this? You can go into IMIS and pull that up? We are making this much more complex than the federal language. We hope it is there for a good reason, but we have not seen any data on accident statistics.

Robert Moutrie (Cal-Chamber) agreed with what Mr. Donlan was saying about data. However, putting that aside, he thinks that the obligations created are likely already captured in ANSI Z359.6 so they are not actually new. In fact, they might be repetitive or unnecessary or duplicative. He would say if we already have the requirements in ANSI, that may be duplicative.

In response to Mr. Denning's comments, he proposed a redirect, if condition (A)(c.) exists, then follow (B). He thinks that it may be easier to permit the permanently installed. So you are not writing out Professional Engineers required for a design, so he takes the comment made earlier as correct. It might just be easier to redirect down to that section.

The Chair asked about his other comment regarding Cal/OSHA's concern with regards to the HLL system. When Cal/OSHA goes to an accident investigation and they inspect the HLL system, they would want to know how this system was originally. She thinks that is the reason for their request. So is Mr. Moutrie saying that portion of it is already captured in ANSI Z359.6?

Robert Moutrie (Cal Chamber) replied yes, and for the record Mr. Kramer is sharing his laptop with the ANSI section. As a lawyer, because he knows that the visuals don't go into the record: "Section 3.2 drawing and specification requirements construction documents shall describe the components of all active fall protection systems are to include a statement defining the type of fall protection system and that the design meets the criteria established by the standard." He thinks it is already probably there documentation wise.

He understands the concern that we must have documentation to enforce and he is saying that he thinks that it is already there.

The Chair said are we going to move to strike "d." because it is already going to be included. It is in the ANSI standard and then it says the temporary HLL shall be designed in accordance with ANSI in (A)(a.).

Thomas Kramer (ANSI Z359 Chair, LJB Inc.) offered his laptop to Mr. Yap if he would like to spend a couple minutes to look through the Z359.6 standard in the applicable sections.

The Chair said that ANSI will be incorporated by reference.

Yancy Yap (Cal/OSHA) stated that he has not seen a design on an HLL system even though ANSI may require their documentation. It is a different thing to have it on site for an inspector to see if an inspector were to show up and question an HLL. The designer may not have that particular design on site, even if it's required. This is just coming from his experience as an inspector; the information that I'm requesting is not available.

As a matter of fact, they were just at a job site, Google Bayview, and were looking at the site's HLL system. This was a permanent system, and the design, the designer, the components and information about the HLL system were requested. Cal/OSHA has been requesting it for over a year because when they were there in the early construction phase, they did not have those available.

So even though those are called out in ANSI, his point is that they are not always available to the inspector and that is what he is calling out here. Well, that was called out in ANSI, but it was not yet incorporated by reference. It is not in the current requirement.

Thomas Kramer (ANSI 359 Chair, LJB Inc.) stated if it would be helpful for Cal-OSHA, he can have the current Chair of the Z59.6 standard do a webinar and provide an example of a package from an educational standpoint just so that you have something to benchmark against (to have one example of doing it that you can compare it to in the future).

Yancy Yap (Cal/OSHA) said ANSI is not enforceable; title 8 is enforceable. If we have it in black and white, it is something that would be required.

The Chair replied ANSI will have the effect of law if it is incorporated by reference, which is what we are trying to do in this rulemaking. If we incorporate ANSI Z359.6 by reference, then employers have to follow the requirements of ANSI Z359.6. She suggested that Mr. Yap take some time to read ANZI Z359.6 before making another comment regarding the documentation.

Jason Denning (Cal/OSHA) commented currently only design is incorporated by reference. That would not include this documentation, so it would have to be expressly included. It would have to state shall be designed in accordance with and documentation maintained as section 3.

The Chair added Mr. Denning's suggested text in (A)(a.).

Mike Hein (Con-Fab CA) said that their company fabricates precast concrete bridge-girders and installs lifeline fall protection fixtures inside their girders on a regular basis and some of that may be as simple as a number. Four rebars and a U shape or sometimes a number 14 reinforcing bar. Their work is happening hundreds of miles from the job site. So Item B, what is implied is that somebody from the contractor's side would have to come to their job or their facility every time they are installing these and supervise the installation thereof, or he is going to be inheriting a whole bunch of liability that he does not really think he should be inheriting. So what would be their response to something like this would be to say you are ruining a lot of these good systems.

This does not make any practical common sense to him at all. You must understand the whole industry of where these things are. You are all just assuming that these things just are happening right there on site all the time, but off-site fabrication happens all over the place. So you are going to be sending qualified people all over the place to look at these little items. It does not make sense.

Michael Donlon (Construction Employers Association) stated we have tried to work with Cal/OSHA, and he feels like all they want to do is put “got you” language in so they can get a citation. Again, where is the necessity he thinks before we even consider any of this and part from the federal language. He would ask Cal/OSHA to produce data. Where are the accidents? Where are the citations? Where is the data that we are having this widespread problem with horizontal lifelines rather than their opinion? He would request that maybe they supply that to the Board. It is easy enough to pull up an IMS right now. All we have is a construction section. But if it is happening in construction, it is happening elsewhere. So where are the citations on 1670 was it B2?

Are there a bunch of them? Is this a widespread problem that we have spent all day on, and is there a necessity? What we must show to add a regulation is necessity, or is the federal language good enough or language which is similar to the language we have had for years.

Jason Moore (CS Caulkins) stated he wanted to just touch on the documentation. He is in favor of there being documentation available. His main comment was more tied to this temporary concept. He searched their handout, and temporary is not in there anywhere. That word does not exist in it. Then he searched for routine or infrequent, and we do have that in 3212, under what is now called for roof access on roofs. So what he sees is it is the same definition.

We have always had in the existing language four exposures per year.

The best way he could rationalize it is that this temporary HLL system does not pertain to workers on roofs. It is things other than that. The section is now called work on roofs in 3212. It's on page 44. So he sees a big hunt because if you are using this thing for three months, that is definitely more than four exposures per year. You can get four exposures in a day let alone three months. So if this gets published, bear in mind it does not pertain to work on roofs.

The Chair responded that the three months or less is what we are proposing to be considered as temporary for the section currently discussed. It would be a term that would be defined in section 3210.1—temporary as defined in a vertical standard in section 3210.1

Jason Moore (CS Caulkins) said if we define it as three months then somebody could try to use this and it completely conflicts with 3212. He understands we are not going to get to page 44 today but at another time. He thinks that if we all decide on this and it is something that is going to move forward, then once we get to 3212 it would be really hard to try to align temporary and three months of use with less than four exposures for a year and the definition of routine. So maybe we will address it when we get to page 44 at the next meeting, but he does not see how they line up right now.

Mike Donlon (Construction Employers' Association) said that they do not have to line up because they are distinctly separate regulations. One is a vertical standard, which includes horizontal lifelines, and others work on roof.

Jason Moore (CS Caulkins) responded to Mr. Donlon that, yes maybe, but this section on 3212 is work on roofs. If you read it, it says in accordance with section 3210.1. So it is referencing exactly what we are doing right now, and it is given an exception when you do not have to use fall protection for those intermittent or now.

No, that is not what section 3212 or the revised language for section 3212 on page 44 is saying. It is not giving you an exception there. It says the exception to guardrails is being allowed to use a horizontal lifeline in accordance with section 3210.1 so that that is the exception, but that exception is tied to less than four exposures per year. Therefore, the four exposures per year is really closely linked to this three months that we're now using.

The Chair asked Mr. Moore for the specific section.

Mr. Moore responded that it is on page 44 under "(i) Work on Roofs." That is where it talks about routine as well as the change from infrequent from intermittent.

Jason Moore (CS Caulkins) said the last sentence is where it talks about frequency of exposures.

Mike Donlon (Construction Employers Association) said that is the frequency of a single exposure not the amount of time a horizontal lifeline is in place. There are two separate issues.

Mr. Donlon then asked Mr. Moore, how much experience do you have with regulatory language?

Jason Moore (CS Caulkins) replied he has a lot of experience on regulatory language.

The Chair stated ok. Let us not go there. Responding to Jason Moore, the Chair said subsection (i) states that guardrails are required on roofs except when you do infrequent work, which is defined as four times per year. So for those four times per year instead of guardrails, personal fall protection systems can be used.

Which leads you to this section? Which is saying that if your work on that roof is going to last less than three months, then you could use a temporary HLL system. It is very confusing.

Chuck Wigger (Lamar Advertising) asked to see page 26. He asked if 13 A and B look a lot simpler and use more common sense than what we have tried to beat up for the last day and a half. We now have something that half the room does not even understand, and we have got another standard that he must purchase that is incorporated by reference, that you are letting someone else write for you.

What's wrong with a and b?

The Chair responded that yesterday, the choices were to incorporate ANSI Z359.6 by reference or to use the engineer design and then installed by a qualified person and used under the supervision of a qualified person. So those were the two options, and then there were a lot of comments regarding the feasibility of having a registered engineer design. We tried to solve that situation by making a distinction between temporary use that will allow you to install a system that is not designed by a registered professional engineer but something you could buy from a manufacturer that could be installed and used under the supervision of a qualified person.

Mike Donlon (Construction Employers' Association) said he agreed. He thinks we have gone down a rabbit hole and made this thing exceptionally complex for text that says they shall be installed and supervised by a qualified person to all this language. He does not think they are going to get out of that rabbit hole. He suggested to put this section on hold until the next meeting, which he thinks is going to be sometime after the first of the year. This will give the committee all the time to think about this to some extent because he thinks they are just really going down a rabbit hole and getting really complex and harder and harder to understand with it each iteration.

He thinks Cal/OSHA needs to show necessity, and that would give Cal/OSHA a chance pull up how many citations and how many accidents there have been on horizontal lifelines and show that we need all this complexity in our regulation that is not in the federal. He thought we were done with this. He said he was getting frustrated. He thinks we are banging our heads on the wall and thinks we should move on and come back to this at some later today.

Larry McCune (Research and Standards) stated he thinks mixing construction activities along with routine activities on a roof or building is complicating matters. Many of these things that Mr. Donlon referred to are covered under the Construction Safety Orders by the scope of the orders. General orders are going to be applied more to building activities by employees of the building or whatever and not necessarily construction activities to roof a building, or to build something on top of the building or whatever. It would be more of a temporary exposure. He is of the opinion that there is a need to kind of separate it into construction activities protection versus routine fall protection.

Mike Donlon said that he did not bring up anything on construction, but members have been informed that the work of this committee is going to be rolled into construction and

that gets really scary, where these things are. One trade had 18 units (HLL) on one building. and yes construction is a different animal but is Cal/OSHA going to look at it that way when it comes to that. He brought up his point again on necessity. He stated that he heard anecdotal things; that there are all these problems with horizontal lifelines.

He said Mr. Yap has access to what used to be IMIS. He asked Mr. Yap to pull up the data to show it to the members so they can see if it warrants this level of complexity. Otherwise, he suggested going back to the simpler language. It is easy to understand, and everyone has been following it for years (all 49 other states follow it). Think about that.

The Chair stated that she is not taking any more comments about horizontal lifelines. It is 1:25 PM. We are preserving the proposed text that was suggested, and we're going to tackle it again the next time we meet.

She just wants to get the next business in order because she does not want to run out of time and forget.

Mike Hein (Con-Fab CA) stated that his comment is not specific to the lifelines, but people need to understand there needs to be uniformity between general industry and construction to some degree.

The Chair responded that this is the goal of this particular rulemaking because the people who are doing maintenance are sometimes also doing some construction work. The goal is to harmonize personal fall protection systems.

We want to protect employees; we want them to go home to their families at the end of the day; and when a person is hanging their life on that horizontal lifeline, we want to make sure that they can rely on that horizontal lifeline.

As frustrating as this is, this is just an exercise that we must go through. There will be a pause for a few months before the next meeting. The Chair proposed a meeting date sometime in February. She asked for members to send her an email if they want to be invited again for the next meeting. Most likely, the meeting will be a hybrid meeting, but that has to be confirmed by her supervisor. Members can choose to attend via videoconference.

The Chair will send an invitation for the future meeting, and she asked members who intend to attend by videoconference to confirm. This information is needed ahead of time, because it affects the level of technical support and planning. There is a limit to the group size in order to facilitate discussions.

Advisory many members are invited for their technical expertise, for their knowledge on how rules are implemented at their work site and for their specialty in their areas. She

asked for members to inform her of their availability for the month of February so she can try to accommodate. She had a request not to hold the meeting on Fridays and another request not to start earlier than 9:30 a.m. because of flight arrangements. She will try to accommodate all requests.

In January, members should receive the minutes. The Chair will research the rulemaking record to find information about the one-inch tolerance in section 3209. The post advisory committee language will be provided to members by January. Members will be informed of what will be happening next.

The committee will continue to review the proposal to amend article 2 in chronological order. Fall protection is a big deal, and she asked members to read the proposal and see what kind of changes need to be made.

The Chair asked if there were questions. Hearing none, she thanked the members and ended the meeting.