

**OCCUPATIONAL SAFETY  
AND HEALTH STANDARDS BOARD**

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**FINAL STATEMENT OF REASONS**

## CALIFORNIA CODE OF REGULATIONS

TITLE 8: Chapter 4, Subchapter 4, Article 19, Section 1632 of the Construction Safety Orders;  
and Subchapter 7, Article 2, Section 3212 of the General Industry Safety Orders.

Guarding of Skylights**MODIFICATIONS AND RESPONSE TO COMMENTS RESULTING FROM  
THE SECOND 15-DAY NOTICE OF PROPOSED MODIFICATIONS**

There are no further modifications to the information contained in the Initial Statement of Reasons proposed as a result of the second 15-day Notice of Proposed Modifications mailed on April 12, 2004, and Board staff evaluation.

**Summary and Response to Written Comments:**

Mr. Mark Evans, CEO, Evans Roofing Company, Inc., by letter dated April 27, 2004.

Comment:

Mr. Evans quoted roofing industry revenue data obtained from the National Roofing Contractor's Association for roofing operations performed nationally in 2002. Mr. Evans calculated the percentage of the national figure that represents California in terms of revenue to roofing contractors. From this calculation, Mr. Evans extrapolated the number of skylights encountered per year by California roofing contractors and how that equates to the number of skylight incidents. Mr. Evans stated that based on his calculations, for every 1.5 million encounters with a skylight there is an average of 1 accident.

Mr. Evans argued that although he was unable to calculate how many incidents were related to fully enclosed, permanently-mounted, fully-intact skylights on a commercial, flat-roofed roofing project, the low accident rate is proof that California's existing regulations are effective in preventing falls through skylights without burdening employers with unnecessary restrictions. He stated that there are no temporary skylight covers on the market due to the liability companies would have to accept in order to provide such a product. Barriers, barricades and covers need to be removed in order to roof-in and waterproof the skylight system into the roof structure. When the safety device is removed, the roofer would be committing a violation in order to complete the job.

Finally, Mr. Evans stated that he is aware that California is proposing to allow employers to use a written plan to control the hazard of employees falling through skylights by allowing the roofer to use a plan based on logical, effective instruction that may suspend procedures (use of positive fall protection means) when the nature of the activity or work itself prevents such methods from being used or creates a greater hazard. Mr. Evans stated that he anticipates a plan that can effectively address the concerns of all those involved.

Response:

The Standards Board notes Mr. Evans' mathematical extrapolations on falls through skylights. It also recognizes that data provided by the Division of Occupational Safety and Health indicates that, consistent with accident experience nationally as recorded by the Bureau of Labor Statistics (BLS), falls are the greatest single source of injuries and fatalities in the construction industry, and that within the construction industry, falls through skylights and roof openings are significant. Recommendations made by the National Institute for Occupational Safety and Health (NIOSH) via their hazard bulletins on industrial fall protection concur with those of the insurance industry and construction safety professionals to the extent that roof and skylight openings should be covered or guarded whenever workers are present. Consequently the Board and the Division agree that the accident statistics demonstrate a need for employees working in proximity to skylights to be positively protected from a fall into/through a skylight.

With regard to Mr. Evan's concern over enforcement liability when barriers, barricades and covers need to be removed to perform waterproofing around the skylight curb, Section 3212 includes an existing short duration/limited exposure exception that permits incidental tasks to be performed without having to implement positive control methods. Also, if the employer can demonstrate that the installation of guardrails, use of personal fall protection, covers and screens are infeasible or create a greater hazard, the employer can utilize a written fall protection plan as proposed in the Second 15-Day Notice of modifications.

Labor Code section 142.3(a)(2) requires the Board to adopt standards at least as effective as those of federal OSHA. Consistent with NIOSH, the Board notes that Federal OSHA regulations require all roof and skylight openings to be guarded by positive means (e.g. covers, screens, guardrails) to protect workers from falls through skylights. Board staff notes that the Second 15-Day Notice of Proposed Modifications consisted of deleting the stanchion/warning line option and the exception permitting detail work with the use of a spotter, and replacing it with a new option which clarifies that the employer may use a fall protection plan as described in CSO Section 1617.1 to address fall protection hazards around existing skylights. The Board recognizes Mr. Evan's support for the modification as proposed in the Second 15-Day Notice permitting the use of a fall protection plan, when it can be demonstrated that the positive methods described in Section 3212(e) are either infeasible or would create a greater hazard.

The Board thanks Mr. Evans for his comments and participation in the Board's rulemaking process.

Mr. Michael Alio, MA, ASP, President, Public Agency Safety Management Association (PASMA) South, City Safety Officer, City of Long Beach, by fax dated April 29, 2004.

Comment:

Mr. Alio commented on proposed regulatory text that was not noticed for modification as shown in the Second 15-Day Notice of Proposed Modifications. Specifically, Mr. Alio's comments were directed to the strength requirements for skylight covers and screens, and the proposed deletion of the use of cones as an option. Mr. Alio stated that employers will now have to implement one of the more costly positive means/methods to protect workers from falls through existing skylights (i.e., screens, covers, guardrails and personal fall arrest systems). Mr. Alio stated that the injury/fatality statistics do not support deleting the use of cones as an option. He also described adverse cost impact upon public and private sector employers and taxpayers that could be created by the proposal and cited a \$300-\$500 cost figure for materials and installation of the least expensive systems. Mr. Alio cited statistics from which he extrapolated three skylight fall incidents statewide and stated that it is unknown if any of those occurred while cones were used as a safety barrier. Mr. Alio requested the Board not adopt the proposed revisions unless a grandfather provision or variance is provided for existing skylights.

Response:

Mr. Alio's comment about the strength of skylight covers is outside the scope of the Second 15-Day Notice of Proposed Modifications. Although staff is not required to provide a response to comments on regulatory text previously noticed, it is important to mention that the advisory committee deliberations and discussions with the Division of Occupational Safety and Health and manufacturers of skylight screens and covers, indicate that screens, and some skylight materials, are being manufactured to meet the proposed 400-pound strength requirement. Moreover, screens or covers are temporary devices and comprise only 2 of the 5 total methods now proposed to be available to the employer for use to protect employees from a fall through a skylight.

In response to Mr. Alio's comment that employers will now have to implement costly positive means to protect their workers from falls through skylights, California is required through its state plan agreement with Federal OSHA and per the California Labor Code to promulgate standards which are at least as effective as those enforced by Federal OSHA for the same issue. Cones and warning lines set back 24 inches from a skylight opening serve as a warning method not a barrier, and are arguably not permitted as a means of fall protection by Federal OSHA. Consequently, to mitigate any argument for California to be at least as effective as federal counterpart standards, the cones and warning lines option was deleted.

With regard to Mr. Alio's \$300-\$500 cost figure for materials and installation and the adverse cost impact upon public and private sector employers and taxpayers, the assumption by Board staff is that Mr. Alio is referring to costs associated with the use of positive means of guarding the skylight opening in lieu of cones and warning lines. Board staff notes that covers, screens, guardrails or fall protection systems are already required in the existing standard and, based on

the cost figures referenced by Mr. Alio, it would appear that Mr. Alio is assuming that every skylight in California is equipped only with cones and warning lines as a means of protecting employees from falls through skylights. On the contrary, it is Board staff's belief that many employers already meet the proposed standard and use covers, screens, guardrails and fall protection systems that effectively prevent falls through skylight openings. As mentioned earlier, cones and warning lines set back 24 inches from a skylight opening serve only as a warning method would not prevent a fall through a skylight opening. Board staff notes that a representative advisory committee was convened partly to discuss any potential cost impact that the proposal might impose, however, the committee members indicated that the cost impact would be insignificant. Investments in positive fall protection means are typically reused countless times. They also can have significant ramifications in terms averting potential adverse worker compensation costs incurred as a result of serious employee injury or a fatality. Furthermore, many skylight manufacturers currently design and build their skylights with UV resistant materials that already meet the proposed 400-pound strength requirement thereby obviating the need for any of the fall protection methods provided in the proposal.

For the aforementioned reasons, the Board believes no further modifications (i.e. grandfather provision) to the proposed modifications as described in the Second 15-Day Notice of Proposed Modifications are necessary. The use of the variance process, as mentioned by Mr. Alio, is governed by requirements that would not apply in the rulemaking process.

The Board thanks Mr. Alio for his comments and participation in the Board's rulemaking process.

Mr. Christopher J. Walker, for Nossaman, Guthner, Knox & Elliot, LLP, on behalf of the California Association of Sheet Metal and Air Conditioning Contractors, National Association (CAL SMACNA), by letter dated April 29, 2004.

Comment:

Mr. Walker noted that upon review of the proposal by CAL SMACNA contractors, they have expressed concern regarding Section 3212(f), which was not included in the proposed modifications to be considered under the Second 15-Day Notice of Proposed Modifications. Mr. Walker stated that CAL SMACNA believes that it may be impractical to impose such rigid requirements on "access" on glazed surfaces, particularly for replacement and repair jobs. Mr. Walker gave an example of a worker replacing a broken pane or section of glass, noting that there may be no other access from which to conduct that repair or replacement other than upon the already "in-place" glass. He questioned that if the existing glass is reinforced, tempered, etc., and has already been considered "safe" by existing industry standards or practice, why should a new and costly certification by a licensed engineer be required? Mr. Walker stated that the CAL SMACNA contractors believe that this new "certification" requirement by a licensed engineer could increase costs by 20-30%, and that this cost estimate is based upon the assumption that new costs are not limited to only the cost of the engineer and their approval, but that the contractor, supplier or manufacturer must now also submit shop drawings and details that will also require the engineer's review. Mr. Walker concluded his comment by asking that the Board

consider providing an exclusion to the requirements in subsection (f) based upon the condition of the glazed surface material (reinforced, tempered, etc.), the contractor's past practice, or when the proposed additional requirements will actually impede safe practices (e.g., limiting access to the work).

Response:

Mr. Walker's comments are outside the scope of response required by Board staff as it pertains to regulatory text that was not noticed for modification. However, Board staff would like to respond to Mr. Walker's comments for the mutual benefit of the commenter and the Board.

Glass that is labeled as being tempered does not mean that the glass is designed to support a worker who may be carrying tools and equipment. The 9th Edition of the Construction Dictionary, Published by Greater Phoenix, Arizona Chapter #98 of The National Association of Women in Construction, 1996, provides the following definition for tempered glass:

*"Glass that has been rapidly cooled from near the softening point, under rigorous control, to increase its mechanical and thermal endurance."*

The designation "tempered" only refers to its durability or endurance not its ability to support a load (strength). Tempered glass used as glazing on a roof, canopy, or skylight is typically designed to endure the impact of small objects (e.g. rock, hand-tool, etc.) without shattering into shards that could fall and severely injure persons below. A worker using a glazed roof, canopy, etc., as a working surface, however, can only do so if the working/walking surface is able to safely support the load. When available, the glass manufacturer's specific product documentation bearing the seal/stamp of a California registered engineer, substantiating the glazed roof's load bearing capacity/structural integrity to safely support all anticipated loads, including workers, tools and equipment, would satisfy the standard. Board staff notes that in the absence of any such documentation, the only scientific way to ensure that a section of glazing would be sufficient to support the anticipated loads is to have the glass evaluated by a competent individual who could determine whether given the anticipated loads, manufacturing documentation, physical characteristics, etc., the glass would be able to safely support the intended load.

The Board thanks Mr. Walker for his comments and participation in the Board's rulemaking process.

MODIFICATIONS AND RESPONSE TO COMMENTS RESULTING FROM  
THE FIRST 15-DAY NOTICE OF PROPOSED MODIFICATIONS

Further modifications to the information contained in the Initial Statement of Reasons are proposed as a result of the 15-day Notice of Proposed Modifications mailed on October 31, 2003.

As a result of meetings which took place on January 8 and February 3, 2004 between the Board staff, Division Staff and representatives from the roofing industry and a March 29, 2004, field visit to a roofing operation involving work around existing skylights, Board staff has further modified the proposed language shown in the first 15-Day Notice of Proposed Modifications dated October 31, 2003, as follows:

Section 3212(b)

It is proposed to add the requirement that a qualified person design floor and roof opening covers. The proposed modification recognizes those instances when it is necessary to design for a higher strength requirement than that listed in the original proposal, which is the greater of 400 pounds or twice the weight of the employees, equipment and materials that may be imposed on any one square foot area of the cover at any time. The modification is necessary to allow floor and roof opening covers to be designed to withstand stronger forces when needed.

Section 3212(e)

It is proposed to delete the contents of subsection (e)(5), which pertains to the use of temporary warning lines, and replace it with a requirement permitting the use of a fall protection plan (FPP) as described in Construction Safety Orders (CSO) Section 1671.1, as a method of protecting employees from a fall through an existing skylight, provided it can be demonstrated that the positive fall protection methods described in subsections (e)(1-4) are either infeasible or contribute to a greater hazard. The proposed modification will allow employers who find that it is either impractical or hazardous to use conventional fall protection means around existing skylights to use an effective administrative method already provided in the CSO for construction industry applications. The modification is necessary to ensure that in cases where conventional fall protection methods are not viable or could create a greater hazard, employees are protected from the hazard of falling through an existing skylight via the use of a FPP.

**Summary and Response to Written Comments:**

Mr. Len Welsh, Acting Chief, Division of Occupational Safety and Health (Division), by memorandum to the Board dated November 18, 2003.

Comment:

Mr. Welsh stated that the Division is concerned that proposed Exception No. 2 under 3212(e), which under certain conditions permits the temporary suspension of the fall protection requirements outlined in (e)(1-5) for qualified persons working in proximity to skylights while performing detail work, might somehow reduce the effectiveness of existing regulations contained in Article 24 with regard to fall hazards at skylights and skylight openings during roofing operations. In addition, Mr. Welsh indicated that the Division continues to believe the proposal is not at least as effective as federal OSHA language contained in 29 CFR 1910.23(a)(4) for skylights and skylight roof openings, since federal OSHA does not permit cones and warning lines to be used in lieu of guardrails and covers.

Mr. Welsh included a copy of an Integrated Management and Information System (IMIS) report showing that there were 70 skylight accidents in California between July 1997 and December 2003 for all Standard Industrial Classification Codes (SIC). Mr. Welsh noted that the IMIS data indicated that 17 of the 70 skylight accidents (24%) resulted in fatalities. For SIC Code 1761, i.e., roofing, there were 23 incidents involving roofing operations, which included 5 fatalities (29%). Mr. Welsh stated that the Division believes these statistics demonstrate the need for more stringent fall protection requirements.

Mr. Welsh concluded by suggesting that the skylights advisory committee be reconvened to give a “full airing” of the issues that have been raised as a result of public comment.

Response:

As a result of Mr. Welsh’s comment, Board staff met with Division representatives and representatives from union and non-union roofing contractors to discuss the proposed language in question, in light of comparable federal standards and those aspects of roofing operations that prove problematic to standard fall protection requirements. An on-site field visit to a roofing operation involving existing skylights also proved beneficial in providing an understanding of the practical issues faced by roofers regarding the use of fall protection, and useful to staff in crafting modified language that will be effective in protecting workers from falling through a skylight. The use of a fall protection plan (FPP) as prescribed in Construction Safety Orders (CSO) Section 1671.1 was discussed, and judging from industry response, it appeared that the use of a FPP would be the best way to address the feasibility of conventional fall protection and roofing operations such as detail work. Consequently, Board staff has modified the proposal by deleting proposed subsection (e)(5), which permits the use of stanchions and warning lines (perimeter guarding), and proposed exception No. 2, which under certain conditions would have permitted the temporary suspension of the fall protection requirements outlined in subsections (e)(1-5) for qualified persons working in proximity to skylights while performing detail work. New subsection (e)(5) is proposed which permits the use of a fall protection plan as prescribed in CSO Section 1671.1 when the fall protection methods contained in subsections (e)(1-4) are either impractical or would create a greater hazard. Board staff believes that these further modifications are necessary to resolve the questions raised regarding equivalency with federal standards while maintaining temporary flexibility (via a fall protection plan) for unique industry practices such as detail work.

The Board thanks Mr. Welsh for his comments and participation in the Board’s rulemaking process.

MODIFICATIONS AND RESPONSE TO COMMENTS RESULTING FROM  
THE 45-DAY PUBLIC COMMENT PERIOD

There are no modifications to the information contained in the Initial Statement of Reasons except for the following substantive, nonsubstantive and sufficiently related modifications that are the result of public comments and/or Board staff evaluation. Minor nonsubstantive and

sufficiently-related modifications are also proposed and are noted in the modified text contained in the 15-Day Notice of Proposed Modifications. In addition, the following substantive and sufficiently related modifications are proposed:

Section 3212(b)

A modification is proposed for subsection (b) to specifically require that floor and roof opening covers be designed by a qualified person in addition to meeting the specified minimal strength requirements. The proposed modification is necessary to include those instances where a cover meeting the proposed minimal strength requirements may not be enough to safely support the intended load(s).

Section 3212(e)

A modification is proposed to add another exception to subsection (e) which would exclude qualified persons performing detail work around a skylight from the fall protection requirements outlined in the subsection, provided a spotter is used and the employer can show that use of the positive fall protection methods would either create a greater hazard or prevent the work from being done.

The proposed modification is necessary to provide employers who perform detail work around existing skylights (usually roofers) with a practical approach to addressing the issue of fall protection for their employees that will ensure that the employees can perform their work and still be effectively protected from a fall through a skylight.

**Summary and Response to Oral and Written Comments:**

I. Written Comments:

Mr. Steven Johnson, Director of Safety and Compliance Services, Associated Roofing Contractors of the Bay Area Counties, Inc., by letter dated August 15, 2003.

Comment:

Mr. Johnson stated that he was a member of the advisory committee which reviewed proposed changes to Construction Safety Orders (CSO) Section 1632 and General Industry Safety Orders (GISO) Section 3212. Mr. Johnson stated that the Associated Roofing Contractors oppose the deletion of existing GISO Section 3212 (e)(2)(C), which allows the use of temporary warning lines or cones in close proximity to existing skylights to warn employees of the potential fall hazard. Mr. Johnson indicated that elimination of this provision is unnecessary and will cause an undue burden on roofing contractors and their employees. Mr. Johnson stated that it appears that the Division of Occupational Safety and Health (Division) is proposing changes to existing GISO Section 3212, because the Division contends that this regulation is different from its federal counterpart, relying on data from the Federal Integrated Management Information System (FIMIS), which shows that there were many instances of falls through skylights and

skylight openings in Region IX and California between 1990 and 2001. The Division therefore believes that California is not at least as effective as federal counterpart regulations and must be amended. Mr. Johnson stated that he disagrees.

Mr. Johnson questioned the validity of the FIMIS data provided and relied upon by the Division, stating that (1) his organization has been unable to replicate some of the data; (2) the data lack crucial details; and (3) in some cases, data were not relevant since the injuries were not the result of falls through skylights. Mr. Johnson stated that many of the accidents recorded in the FIMIS data were the result of the employer's failure to comply with existing regulations. Moreover, not a single accident included in the data involved an employee falling through a skylight where temporary warning lines or cones were used.

Mr. Johnson agrees with the Division that too many workers have been injured via falls through skylights and skylight openings. He argues that more regulations are not what is needed to correct the problem; but rather, more effort needs to be focused on enforcing existing standards.

Response:

Board staff has reviewed the FIMIS data and notes that the key identifier used in the data is the Standard Industrial Classification Code (SIC), which appears next to each accident entry. A review of the SIC codes further reveals that roofers are "lumped" into one SIC classification code with sheet metal and siding trades as SIC code "176." While the FIMIS data provided and relied upon by the Division clearly shows a record of falls through skylight openings for SIC code 176 trades, there is no way to determine the percentage of those accidents that pertain specifically to roofers, nor the extent of employer compliance with existing Title 8 requirements at the time of the accident. Consequently, Board staff concurs with Mr. Johnson to the extent that the Division's data, as it has been presented for consideration, cannot be used to conclude that existing regulations permitting the use of cones and temporary warning lines, as currently provided in Section 3212(e)(2)(C), are ineffective in comparison to federal counterpart regulations.

As Mr. Johnson mentioned, Board staff convened an advisory committee on November 18, 2002, to consider amendments to GISO Section 3212 and CSO Section 1632. It was Board staff's finding that the committee arrived at a consensus<sup>1</sup> recommendation to amend existing Section 3212(e)(2)(C) to replace the cones and warning line option with a more stringent option specifying the use of substantial temporary warning lines (minimum 200-pound breaking strength) mounted on supporting stanchions, intermittently flagged at 6-foot intervals for high visibility and placed 6 feet away from the skylight curb. The proposal, based on the committee's recommendations, requires that any employee in between the warning line and the skylight shall be provided with positive means of fall protection (i.e. covers, screens, personal fall arrest system, or guardrails). While Mr. Johnson was a participant in the advisory committee deliberations, Board staff has no record of any objections or concerns expressed by Mr. Johnson

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<sup>1</sup> The Department of Occupational Safety and Health's "Staff Guidelines on Using an Advisory Committee to Develop a Rulemaking Proposal" states that "While a consensus is more than a simple majority, it does not refer to a recommendation or position held by the Advisory Committee members that is unanimous."

at the meeting. However, at the August 21, 2003 Public Hearing in Sacramento, Mr. Johnson expressed concern over the language in proposed new Section 3212(e)(5), which amends the use of temporary warning lines as an option for guarding skylights and was derived from existing Section 3212(e)(2)(C).

In a September 11, 2003, telephone conversation, Mr. Johnson clarified his concerns to Board staff regarding the use of stanchions and warning lines, but only in relation to jobs involving multiple skylights spread out over a large area roof, and the need for roofers to be able to work around them while performing detail work (i.e., hot mopping of tar and the laying of roof membrane materials around and right up to the base of the skylight curb). Board staff learned that roofing detail work is a planned, methodical, orderly and repetitive process of hot mopping and the manually laying down and placement (fitting up) of roofing membrane material onto a freshly tarred roof surface, typically up to the base of the skylight curb. It usually takes place in conjunction with refurbishment of an existing roof, and is typically performed by a small, trained team of employees, each acting as coordinators and spotters for the other. Once a "process rhythm" is established, the team will move from skylight to skylight taking anywhere from 5 to 10 minutes to perform the detail work before moving on to the next skylight. Considering this team system, staff understands how the proposed regulation in its present form would present a problem to the employees performing detail work. As an example, the use of personal fall protection within an area where fresh, hot, viscous asphalt tar is applied in copious quantities could lead to damage and entanglement of the lines attached to each employee. Point-to-point travel becomes another problem. Guardrails would need to be placed, repositioned and replaced each time detailing was performed. On fresh asphalt, such guardrails might even adhere to the surface.

Consequently, staff believes that modification of the exception that follows Section 3212(e)(5) is justified. Board staff proposes an additional exception to the existing short duration work exception following Section 3212(e)(5) that is intended to provide temporary flexibility to the fall protection requirement provided that: 1) the work to be performed is detail work (i.e., hot mopping and application of roof membrane materials); 2) the work is performed by "qualified persons;" 3) that a spotter is present; and 4) the employer can demonstrate that the use of any of the positive fall protection means specified in Section 3212(e)(1-4) would either prevent the work from being done or create a greater hazard.

The Board thanks Mr. Johnson for his comment and participation in the Board's rulemaking process.

**[NOTE: Upon further Board staff evaluation, the Board has decided to remove the additional exception to the existing short duration work exception following Section 3212(e)(5). See the Board's response to Mr. Welsh's comment received during the first 15-Day Notice by memorandum dated November 18, 2003.]**

Ms. LeEllen Williams, Executive Director, Roofing Contractors Association (RCA) of Southern California, Inc., by letter dated August 19, 2003.

Comment:

Ms. Williams stated that she was a member of the advisory committee which met to discuss board staff's proposed amendments to Sections 1632 and 3212, and stated that the RCA is opposed to the deletion of Section 3212(e)(2)(C) which allows the use of temporary warning lines and cones to be placed in close proximity to existing skylights to warn employers of the potential fall hazard. Ms. Williams stated that the elimination of this provision will result in undue hardship on roofing contractors and their employees.

Ms. Williams stated that the RCA concurs with Mr. Johnson's evaluation and reiterates Mr. Johnson's conclusion that the problem is not the result of an ineffective regulation, but rather, employer non-compliance with the existing regulation. Ms. Williams stated that RCA supports Mr. Johnson's call for increased enforcement of the regulation by the Division.

Ms. Williams closed by stating that the RCA does not want to see its employees injured on any jobs and that the roofing industry works diligently to support provisions in safety regulations that help them keep employees safe. She stated that in RCA's opinion, it is illogical that the Standards Board would require a change in a regulation because the current regulation is not adequately enforced.

Response:

See Board staff's response to Mr. Johnson's comment above.

The Board thanks Ms. Williams for her comment and participation in the Board's rulemaking process.

Mr. Mark Evans, Chief Executive Officer (CEO), Evans Roofing Company, Inc., by letter dated August 20, 2003.

Comment:

Mr. Evans stated that typically roofers provide barricades at the open deck areas where skylights are absent from the skylight opening or they will provide a cover made of plywood with stenciling that warn workers not to step on the cover. Mr. Evans stated that barricades are used when there is no roofing work being done. The opening might have been created as a result of a skylight or HVAC equipment installation. Mr. Evans stated that all unattended holes should be barricaded, however, this is not the case with an existing, fully intact skylight.

Mr. Evans explained the problems using barricades for fall protection while roofing work is being performed. First, he indicated that skylights are essentially holes that need barricades if it is unattended and dangerous. He states that they cannot be set on freshly laid roofing as they adhere to the hot asphalt, creating a greater hazard by constantly prying them off to resituate them on each subsequent layer of roofing. Furthermore, barricades cannot be used when administering the roofing around the skylight perimeter, as it needs to be completely sealed.

The use of covers over existing skylights creates additional problems, because they too have to be continually positioned and repositioned for the next layer of roofing material. While Mr. Evans notes the existence of a skylight cover that can be permanently affixed to the roof above the skylight, he stated that it cannot be effectively reused. In addition, it is highly questionable as to whether such skylight covers would violate the fire codes which specifically prohibit the mounting of any obstruction to the skylight system for skylights designed to blow open in case of fire, smoke or heat.

Lastly, use of a personal fall arrest system (being tied off with a life line) creates a very serious hazard for employees, such as the felt layer who typically walks backwards concentrating on laying down a smooth flow of asphalt onto the roof. Safety lines could be come damaged, entangled or otherwise rendered unsafe for use resulting in even more threatening fall hazards. Mr. Evans stated that cable should be used where the worker is stationary and unable to ensure his/her balance because of roof slope or reach conditions. Retractable cable systems must be able to operate smoothly to be effective and not become entangled or stuck with asphalt. Since such personal fall protection systems has to ensure that the worker does not fall more than two feet, the felt layer would have to reattach his/her cable every 3.5 feet. The number of anchors you would need on the roof would be staggering.

Mr. Evans concluded by stating that he believes the regulations will have the opposite effect on fall protection because no one (roofer) will be able to follow them. Thus, it would lead to more hazardous conditions.

Response:

See Board staff's response to Mr. Johnson's comment above. Board staff recognizes the unique fall protection challenges with respect to roofing operations involving skylights and/or skylight openings and proposes to modify the proposal accordingly.

The Board thanks Mr. Evans for his comment and participation in the Board's rulemaking process.

Mr. Len Welsh, Chief, Division of Occupational Safety and Health (Division), by memorandum to the Board dated August 22, 2003.

Comment:

Mr. Welsh stated that the Division's original Form 9, Request for New, or Change in Existing, Safety Order, requested that the use of cones and warning lines be deleted from existing Section 3212(e)(2)(c). Mr. Welsh stated that proposed Section 3212(e)(5), which permits the use of warning lines, should be deleted. He stated that warning lines do not provide effective temporary or permanent solution fall protection, especially when workers approach the skylight, because they are easily crossed by workers and are subject to deterioration and movement. Mr. Welsh noted that the comparable federal regulations contained in 29 CFR Part 1910.23 (a)(4)

require skylight floor openings be guarded by skylight screens or guardrails, but do not allow the use of warning lines because they are considered to be less effective than screens or guardrails.

Response:

As stated in the Board's response to Mr. Johnson's comment, Board staff convened a representative advisory committee on November 18, 2002, to consider amendments to GISO Section 3212 and CSO Section 1632. Following lengthy discussion, it was Board staff's finding that the committee's consensus recommendation was to retain the short duration/limited exposure exception in Section 3212, delete the existing optional use of cones and warning lines contained in Section 3212(e)(2)(c) and replace it with a more stringent option specifying the use of substantial warning lines. These warning lines are to: (1) have a minimum 200-pound breaking strength, (2) be attached to stanchions positioned so to minimize displacement or toppling over, and (3) be intermittently flagged every 6 feet for increased visibility with the line resting no less than 39 inches, but not higher than 45 inches above the working surface. The warning lines and stanchions are to be placed not closer than 6 feet from the skylight curb.

The advisory committee minutes reflect a debate between the Division and the roofing industry as to whether or not the use of cones/warning lines, as currently allowed in Section 3212, should be deleted. Board staff believes that the current proposal, as modified, reflects a reasonable compromise which accommodates both industry and Division concerns. The proposed language in Section 3212(e)(5) provides a conspicuous visual warning to employees and a barrier intended to keep employees away from the danger zone while providing a reasonable fall protection option. The proposal, as modified, recognizes instances where a certain means of fall protection, such as covers, screens, personal fall protection and guardrails, can be problematic (particularly to roofers) or ineffective, or can contribute to even greater hazards, as described in Mr. Johnson's and Mr. Evans' comments.

In response to the Division's comment as to the effectiveness of the proposal in comparison to federal counterpart regulations, Board staff has not received any correspondence from Federal OSHA Region IX stating that the use of warning lines in existing Section 3212(e)(2)(C) is not at least as effective as federal language, as requested. Board staff notes that the determination of effectiveness is not judged solely on whether or not the state plan language is verbatim of the federal language, but whether, in the opinion of Federal OSHA, the state plan language effectively addresses the issue and provides equivalent safety. Moreover, Board staff wishes to emphasize that while the use of warning lines is still permitted in proposed new Section 3212(e)(5), their construction and use as a means of fall protection are consistent with, and in some cases more stringent than, federal counterpart regulations contained in 1926.502(f)(2).

Based on the foregoing, the Board believes deletion of Section 3212(e)(5) as suggested by the Division is unnecessary, however the Board has modified the provision to address the Division's comments to the extent that the Board proposes to delete the existing cones/warning line requirement for a more stringent stanchions/warning line requirement.

**[NOTE: Upon further Board staff evaluation, the Board has decided to delete the contents of subsection (e)(5) regarding the use of temporary warning lines, and replace it with a requirement permitting the use of a fall protection plan (FPP) as described in Construction Safety Orders (CSO) Section 1671.1. See the Board's response to Mr. Welsh's comment received during the first 15-Day Notice by memorandum dated November 18, 2003.]**

II. Oral Comments:

Oral comments received at the August 21, 2003 Public Hearing in Sacramento, California.

Dialog between Mr. Patrick Bell, Senior Safety Engineer, representing the Division of Occupational Safety and Health (Division); Steve Rank, Chairman, Occupational Safety and Health Standards Board (Board); Len Welsh, Chief, Division; and Mr. Art Murray, Board Member.

Comment:

Mr. Bell stated that the Division would like to see Section 3212(e)(5) which permits the use of temporary warning lines modified by deleting the language that permits their use in conjunction with cones. He stated that they do not provide fall protection as mandated by the rule and are not as effective as guardrails or covers for protecting workers who might be at risk for falling through skylights or skylight openings. Mr. Bell stated that there have been too many fatalities and believes that deletion of the warning line option is necessary. Mr. Bell mentioned that there is nothing to prevent employees from crossing a warning line. Mr. Bell stated that Federal OSHA requires all skylights to be protected by either guardrails or covers; consequently, the Division believes the proposal is less effective than federal counterpart regulations. When asked by Chairman Rank if the Division could substantiate their concern with documentation, Mr. Bell stated that he could not but that statistical documentation had been submitted with the Division's original Form 9. Mr. Welsh added that the Division's comment letter had not yet been signed, but would be submitted after the hearing.

There was additional dialog between Board member Art Murray and Mr. Bell. Mr. Murray asked Mr. Bell if he participated in staff's advisory committee meeting and reviewed the meeting minutes. Mr. Bell responded that he had. Mr. Murray stated that the minutes reflect consensus among the advisory committee members with regard to the issue of warning lines. Mr. Bell recalled that there had been such a discussion at the meeting, but there was no consensus that warning lines should be permitted. Mr. Murray inquired whether there were any federal provisions that permit the use of warning lines. Mr. Bell stated that the purpose of the Division's Form 9 was to ensure that Title 8 is at least as effective as the federal regulations.

Response:

Section 3212(a)(1) requires that roof and/or skylight openings be guarded by a cover, guardrail or equivalent. When covers are not in place, Section 3212 requires that the opening be constantly attended by someone or be protected with a guardrail. For existing skylights

requiring maintenance, repair and/or replacement, or reapplication of roofing materials around the skylight(s), Section 3212(e) of the proposal applies. Section 3212(e) requires the employer to protect any employee who may approach a skylight within 6 feet from the opening by (1) skylight screens or guardrails which meet the requirements of Section 3209, (2) use of a personal fall protection system (tying off to an anchorage point), or (3) substantial warning lines possessing a minimum 200-pound breaking strength, conspicuously flagged every 6 feet, and attached to stanchions secured against falling over positioned at least 6 feet away from the skylight.

In its Form 9 request, the Division specifically requested that Section 3212(e)(2)(C) be amended to delete the existing cones or warning line option placed 24 inches away from the skylight. The advisory committee concurred, but agreed to replace it with the warning line option reflected in the proposed language in Section 3212(e)(5). The proposed language prohibits an employee from being within the 6-foot perimeter of the stanchions and warning lines, unless the skylight is provided with a cover or screen, or the employee was tied off to an anchorage point. Board staff believes that the proposal is a fair and reasonable compromise between industry and Division concerns while maintaining effectiveness relative to federal counterpart regulations. See also the response to Mr. Welsh's written comment above.

Regarding the data and documentation supplied and relied upon by the Division, see Board staff's response to Mr. Johnson's written comment.

For the reasons stated above, the Board believes modification of the proposal to delete the proposed language in Section 3212(e)(5) is unnecessary.

Dialog between Mr. Steve Johnson, Associated Roofing Contractors of the Bay Area Counties (ARCBAC); Liz Arioto, Board Member; Mr. Art Murray, Board Member; and Steve Rank, Chairman, Occupational Safety and Health Standards Board.

Comment:

Mr. Johnson stated that he participated in the advisory committee to review proposed amendments to Sections 1632 and 3212. He indicated that while California standards are different from federal language, there is no evidence anywhere to suggest that California's existing standards are not at least as effective as the federal counterpart language. Mr. Johnson stated that the Division's request to amend Section 3212 is predicated on Federal Integrated Management Information System (FIMIS) data from Federal OSHA from 1990-2001. Mr. Johnson's evaluation of the data indicates that there is nothing to suggest that warning lines or cones are ineffective. Mr. Johnson believes the Division's request for change to Section 3212 is unsupported and that better enforcement of existing regulations is what is needed. Mr. Johnson indicated that changes to Section 3212 have a proportionally greater impact upon roofing operations than any other trade, and multiple skylights on large open area roofs can present the most challenging fall protection issues. For example, tying off in the presence of hot, tarry asphalt can present many new hazards. Mr. Johnson stated that warning lines are effective and cones are useful in situations where there are skylight configurations that do not allow room to

work. Warning lines can be used to demarcate areas of the roof where no work is being conducted. Mr. Johnson emphasized that the roofing industry is very concerned about their employees falling through skylights; and only until building codes adopted the 400-pound strength requirement for skylights will skylights will be sufficiently strong to withstand an employee fall. Given the nature of the work, the use of cones and warning lines for day-to-day roofing operations is a necessity.

Following Mr. Johnson's comments, Board dialog ensued with Ms. Arioto asking Mr. Johnson if he was aware of any accidents using cones. Mr. Johnson replied that the data in the rulemaking file do not show incidents where workers have walked by cones and fallen through a skylight. Ms. Arioto questioned the effectiveness of cones as warning devices in preventing employees from backing up into openings. Mr. Johnson replied that the only practical use of a cone would be a situation where use of warnings lines 6 feet away from the skylight is impossible. Mr. Murray asked Mr. Johnson if the advisory committee determined that use of cones should be prohibited, leaving the warning line option. Mr. Johnson replied that there was discussion on that issue, but no consensus was reached. Mr. Murray also asked Mr. Johnson if he believed the federal regulations allow the use of warning lines and cones. Mr. Johnson replied that they do not. Mr. Murray then questioned whether use of cones and warning lines would be at least as effective as the federal standards. Mr. Johnson stated that existing regulations in California are at least as effective as the federal regulations.

Response:

See Board staff's response to written comments from Mr. Steve Johnson, Ms. LeEllen Williams, and Mr. Mark Evans, and Mr. Patrick Bell's oral comment at the August 21, 2003 Public Hearing.

Board staff agrees with Mr. Johnson that roofers are proportionally more affected by the proposed amendments and modifications to Section 3212 than any other trade. At the same time, employees are by experience more qualified and accustomed to working on roofs than most other trade-persons. Board staff recognizes the fall protection problem facing roofers in performing what is known in the roofing industry as "detail work" around multiple skylights on large open area roofs with teams of trained roofers attempting to conduct their methodical work. While it was Board staff's finding that the committee's consensus recommended deleting the use of simple cones and utilizing more substantial stanchions and warning lines, in recognition of the industry's dilemma. Board staff proposes a modification to the proposal which would permit workers to be inside a 6-foot fall protection perimeter only when certain conditions are met, including the use of a spotter to warn the employee when he/she is in danger of falling through a skylight. Since use of a spotter has proven to be an effective accident deterrent in other industry operations (as required by Title 8), Board staff believes it will be equally effective for workers performing detail work around skylights, as stipulated in the modification proposed to the exception in Section 3212(e)(5).

The Board agrees with Mr. Johnson that amending the building code to require all skylights to meet increased strength requirements will have a positive effect on fall protection around

skylights. Moreover, the Board recognizes that Title 8 may vary from the verbatim federal language (as it does on a variety of issues), it does not necessarily mean that the state's regulations are not as least as effective as federal counterpart regulations.

The Board is of the opinion that the proposal, as modified, will accommodate the needs of the industry and increase employee safety, while not compromising its effectiveness relative to federal counterpart regulations.

Mr. John Bobis, Aerojet, Incorporated.

Comment:

Mr. Bobis stated his familiarity with accidents involving employees falling through skylights and stated that they were the result of covers, screens or guardrails being improperly designed, used or maintained. Mr. Bobis suggested that the "Note" in Section 1632 become part of the regulation. Mr. Bobis also suggested rewording the "Note" following Section 1632(b)(1) to read: "Floor, roof, and skylight openings shall be guarded in accordance with Section 3212(e) of the General Industry Safety Orders by standard or temporary railings or covers." Mr. Bobis further suggested modifying Section 3212(b) to require that covers be designed by a qualified person. Mr. Bobis indicated that he was not sure where the proposed 400-pound strength requirement came from; but that in some cases, it may not be enough and consequently should be designed by a qualified person. With regard to the use of warning lines, Mr. Bobis indicated that such lines are permitted by roofing regulations in existing Title 8, Article 30, and that federal standards permit the use of a fall protection plan, which permits the use of warning lines in lieu of guardrails.

Response:

The Board agrees with Mr. Bobis that there are falls through skylights that are attributable to improperly designed or otherwise inadequate skylight covers. The use of covers and railing protection is by no means a guarantee that an employee will be protected from a fall through a skylight or skylight opening. Obviously, the cover, screen or guardrail must be able to withstand, without failure, the anticipated loads, or the protection will be severely compromised. However, the Board believes the Note which follows Section 1632(b)(1) is sufficiently clear to indicate to the employer that the guarding requirements for existing skylights are to be found in GISO Section 3212(e). Therefore, it does not need to become part of the regulation to improve its effectiveness or enforceability. The guarding requirements for existing skylights are in Title 8, Section 3212 and can be easily located. In addition, the Note refers the reader to GISO Section 3212(e), which contains an internal reference to GISO Section 3209 in subsection (e)(2). Section 3209 contains design requirements for guardrails whenever guardrail protection is required and appears to be the correct guardrail standard to apply in this case. Therefore, the Board believes that no modification to the proposal with regard to the issues described above is necessary.

The Board agrees, however, with Mr. Bobis' suggestion to specify that covers be designed by a "qualified person," consistent with other Title 8 regulations. The 400-pound strength requirement is a crucial factor in the effectiveness of the cover to support the load of an employee who should step or fall onto it, however, there may be instances when it is necessary to design for a higher strength requirement. Consequently, the Board has modified Section 3212(b) as suggested by Mr. Bobis.

Dialog between Mr. Michael Kanther, Chief of Risk Management, Division of the Los Angeles County Fire Department; also with Captain Ken Douglass and Captain Tony Duran; Board Chairman Steve Rank, Board Member Liz Arioto, Mr. Len Welsh, Chief, Division, and Mr. Michael J. Manieri Jr., Principal Safety Engineer, Standards Board.

Comment:

Mr. Kanther noted that according to the Initial Statement of Reasons, the rulemaking was believed to be necessary as a result of a number of falls through skylights that occurred between 1990 and 2001. Mr. Kanther indicated that he was aware of the Division's Form 9 request. Mr. Kanther stated that the proposal may have an unintended effect upon fire departments and fire services statewide. Mr. Kanther explained that fire departments/fire services perform what is known as "roof company operations," where firefighter trainees are taken to the top of a building to cut holes in the roof with saws and practice roof venting techniques designed to allow smoke and heat to escape from a burning building thus allowing fire crews on the ground to enter the building to (1) rescue trapped victims, (2) contain the fire and (3) save the structure. Mr. Kanther stated that such operations and the ability to conduct a realistic training exercise might be severely impeded by the requirement to provide hole coverings, warning signs, guardrails, etc. Given this, the Los Angeles County Fire Department and other fire departments across the state asked the Board to consider convening an advisory committee to take into account how Section 3212(a), Section 1632, and numerous other Title 8 regulations that affect fire departments and fire service agencies.

Ms. Arioto asked whether there was a way to come up with some type of exemption for fire departments without convening an advisory committee. Mr. Welsh responded that the regulations as they are currently written cause some problems for the fire department and this rulemaking presents an opportunity to deal with this conflict. Mr. Kanther stated that the fire service was not considered when the regulations were written, however, the proposal does affect their ability to train personnel. Mr. Welsh added that an advisory committee could be convened, or the Division could meet with staff members to resolve the issue.

Mr. Manieri stated exceptions have been written in the past for fire services and training for fire services. Mr. Welsh stated that he would like to have the Division and staff meet with the fire agencies and develop a proposal. Chairman Rank assured Mr. Kanther that the Board would work with him on this issue.

Response:

In retrospect, the Board believes the issue of fire service exemptions needs to be thoroughly explored via an advisory committee for these and other issues raised elsewhere in Title 8. Board staff recommends initiating this review through the petition process. Meanwhile, Mr. Kanther may wish to consider the variance process, as permitted under Labor Code Section 143, to bring more immediate relief to the regulatory requirements.

ADDITIONAL DOCUMENTS RELIED UPON

None.

ADDITIONAL DOCUMENTS INCORPORATED BY REFERENCE

None.

DETERMINATION OF MANDATE

These regulations do not impose a mandate on local agencies or school districts as indicated in the Initial Statement of Reasons.

ALTERNATIVES CONSIDERED

The Board invited interested persons to present statements or arguments with respect to alternatives to the proposed regulation. No alternative considered by the Board would be more effective in carrying out the purpose for which the action is proposed or would be as effective and less burdensome to affected private persons than the adopted action.