

**OCCUPATIONAL SAFETY AND HEALTH
STANDARDS BOARD**

BOARD STAFF'S REVIEW OF THE PETITION

By: David Kernazitskas

Petition File No.: 531



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Date: February 28, 2013**

Introduction

On October 25, 2012, the Occupational Safety and Health Standards Board (Board) received a petition dated October 15, 2012 from Bryan Crabb, Executive Director, California Solar Energy Industries Association (Petitioner). The Petitioner requested that the Board amend Title 8, California Code of Regulations, Section 3212 of the General Industry Safety Orders, concerning the requirements for working within six feet of a roof opening or skylight.

Labor Code Section 142.2 permits interested persons to propose new or revised regulations concerning occupational safety and health and requires the Board to consider such proposals and to render its decision no later than six months following their receipt. In accordance with Board policy, the purpose of this evaluation is to provide the Board with relevant information upon which to base a reasonable decision.

History

On April 5, 1989, Petition 271 (Jean P Dickey, UCSD) was received asking the Board to address the guarding requirements of Section 3212 for employees working near the edges of roofs without parapets. The petition was granted and resulted in a requirement to guard work areas for six feet on either side of the work area where employees are exposed to the edge of a roof.

Petition 293 (C.W. Burke, Associated General Contractors of America) was received on May 6, 1991 and requested the Board to address the hazards associated with skylights and skylight assemblies. The petition was granted and required employers to prevent employees from falling through skylights and other roof openings, using various means of protection. The fall prevention provisions of the current standard resulted from Petition 293.

Reason for the Petition

Section 3212 Floor Openings, Floor Holes and Roofs in relevant part requires that openings in the roof, such as skylights, be protected in one of five ways: a cover, a screen, a guardrail, a personal fall protection system, or a fall protection plan in cases where the previous four options can be shown to be impractical. The cover, screen, and guardrail must meet specific design and strength requirements.

Petitioner states that "the provisions of Section 3212 apply to solar installers even though the standard was not designed with the specific fall protection challenges of the solar industry in mind." He states that as currently enforced, Section 3212 prohibits, as a means of compliance, skylights designed to meet the loading requirements for skylight covers. It also fails to recognize skylight screens installed below the skylight assembly, which meet the loading requirements for skylight covers, as suitable means for fall prevention. Finally, the Petitioner states that compliance using flexible skylight nets,

which meet the loading requirements of skylight covers and provide a means of fall protection where other methods are impractical, is disallowed.

The Petitioner points out that Section 3212 was adopted when the vast majority of skylights were glass and that specific subparagraphs of the regulation were written to prevent the glass of the skylight from breaking and injuring people below the skylight. Section 3212(e)(1) requires that skylight screens “not deflect downward sufficiently to break the glass below” nor contain “openings... more than 4 inches by 4 inches...”.

The Petitioner believes that the requirements to prevent the glass from breaking while using a skylight screen are inconsistent with the requirement in Section 3212(e)(3), which allows for the use of a personal fall protection system, because the personal fall protection system does nothing to prevent the skylight glass from breaking.

Petitioner asserts that amendments are necessary to address innovations in the design and materials of skylights and their fall protection systems. The Petitioner proposes that screens be allowed to be placed below or flexible nets above the skylight assemblies when the skylight glazing is not made of glass. He also proposes that personal fall protection be prohibited for use when skylights are made of glass. In regard to covers and skylights engineered to be at least as strong as a cover, Petitioner points out that the Final Statement of Reasons for Section 3212 (adopted in 2004) states that skylights meeting the strength requirements of a cover are intended to be in compliance with the guarding requirements of the Section.

National Consensus Standard

ANSI A12.1 Safety Requirements, Floor, Wall, Railing, Toeboards (1967) is the basis for the federal regulation 1910.23 “Guarding Floor and Wall Openings and Holes”. In 1995, the ANSI A12.1 standard was replaced by ANSI A1264.1 *Safety Requirements for Workplace Walking/Working Surfaces and Their Access; Workplace, Floor, Wall and Roof Openings; Stair and Guardrail Systems*. The most current version of ANSI A1264.1 was approved in 2007. Along with other information, the standard includes requirements for protecting various types of floor and roof openings. Floor or roof openings are to be guarded by a railing system with toeboards or a secured load-bearing cover. Non-load-bearing skylights must be guarded by a load-bearing screen, cover, or a railing system.

Federal OSHA Standards

29 CFR 1910.23 “Guarding Floor and Wall Openings and Holes” regulates the guarding of floor openings, including skylights. The federal standard specifically states that “Every skylight floor opening and hole shall be guarded by a standard skylight screen or a fixed standard railing on all exposed sides.” Regarding floor holes, the standard requires that they be guarded by a standard railing and toe board, or a standard cover.

Federal requirements for guarding floor openings and holes in general industry do not allow for the use of a personal fall protection system or a fall protection plan, even when other methods of protection can be shown to be impractical.

Division of Occupational Safety and Health (Division) Report

To date, a report from the Division has not been received.

Staff Evaluation

The fall prevention requirements of Section 3212 were last updated in 2004. Since then, several new materials have been used as glazing in skylights in addition to glass. Skylights are also becoming more prevalent on structures in efforts to reduce energy consumption.

Staff contacted various groups and individuals to discuss the potential amendments to the fall prevention requirements of Section 3212. Unanimously, they stated interest in attending an advisory committee to discuss more options for preventing falls while working on or around skylights. Feedback was received from the California Solar Energy Industries Association, Associated Roofing Contractors of the Bay Area Counties, United Union of Roofers, Waterproofers and Allied Workers (Local #81), Dr. Nigel Ellis, head of a subcommittee developing an ASTM consensus standard on skylight safety and president of Ellis Fall Safety Solutions, Dr. Robert Harrison of the Center for Occupational and Environmental Health at UC San Francisco, and skylight manufacturers.

Staff's evaluation of the Petitioner's request reveals the following facts:

1. The Petitioner proposes to allow a screen to be placed under a skylight for compliance. The screen below the skylight would not prevent the skylight from breaking, but it would prevent an employee from falling past the standing level of the roof, similar to a personal fall protection system. Many skylights currently employ a screen installed below the skylight as a means of preventing intruders from entering the structure through the roof. Minimum strength requirements and testing protocols could be developed by an advisory committee to ensure that the screen is installed in a manner that would provide safety equivalent to current standards.
2. A second point that the Petitioner makes is that skylights made from a material that is as strong as or stronger than the loading requirements of Section 3212(b) for a screen or cover should not require additional protection or guarding. The Final Statement of Reasons for the 2004 update of Section 3212 (which came about in response to Petition 293) includes a response to a written comment, which states,

“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.”

Additionally, ANSI A1264.1-2007, upon which the federal standard 1910.23 “Guarding Floor and Wall Openings and Holes” is based, states that “Non-load-bearing skylights must be guarded by a load-bearing screen, cover, or a railing system.” If a skylight is designed to be load-bearing, the provisions of the standard requiring fall protection are not required.

Apparently the ANSI consensus standard and the consensus of the advisory committee intended to allow skylights designed to be as strong as or stronger than covers to be sufficient to comply with the fall protection requirements of Section 3212. Simple language could be added to the regulation to make this point clearer.

3. The Petitioner’s proposal regarding skylight netting used as a personal fall protection system is problematic. Although the idea may have merit, the technology is untested to the extent that it has not been designed in accordance with any recognized consensus standards or applicable scientific principles and has conflicts with current federal requirements for fall protection.

The federal requirement for guarding a skylight in general industry states that “Every skylight floor opening and hole shall be guarded by a standard skylight screen or a fixed standard railing on all exposed sides.” The regulation does not allow for any type of fall protection other than a screen or guardrail. The general industry standard for fall protection around skylights is silent with regard to the use of nets.

Federal construction industry regulations allow for netting to be used, as do Title 8 construction standards in California, but only under certain conditions. A major requirement for the use of nets in fall protection, however, is that the net not contact a surface below it when arresting a fall. The skylight netting proposed for use by the Petitioner is draped on the top of the skylight glazing, already in contact with the surface below. Because of the untested nature of the new technology and its absence from (and possible conflict with) federal general industry standards, it is unlikely that a standard permitting the use of the Petitioner’s skylight netting would be judged commensurate with federal OSHA standards.

4. The final element of the proposal is to prohibit the use of a personal fall protection system when the skylight glazing is made of glass. Although there is a hazard from falling through a glass skylight and being cut by glass, this hazard was present when amendments were proposed to Section 3212 by an advisory committee to allow for the use of a personal fall protection system. The Petitioner stated in his application that most skylights were made of glass at the time these amendments were adopted by the Board and it is reasonable to assume that the committee was aware of the same. However, the minutes of the advisory committee do not contain this discussion; therefore, Board staff believes that an advisory committee could be convened specifically to address the matter.

In conclusion, certain elements of the Petitioner's proposal have merit and should be discussed further. Board staff notes that it is contradictory to allow a screen or cover to be employed for fall protection as long as the glass below is not broken and to also allow a personal fall arrest system to be employed, with no concern about broken glass. Allowing glass to be broken with one type of protection, but not others, is inconsistent. Additionally, many newer skylights are made of plastic and vinyl materials that do not pose the same hazards as glass. Discussion of the currently-available technologies for fall protection should take place through an advisory committee to determine whether safety can be enhanced through the use of the new materials.

Recommendation

Based on the foregoing discussion, the petition should be granted to the extent that an advisory committee be convened to discuss the issues raised in the petition. The Petitioner as well as skylight manufacturers should be extended an invitation to participate in the advisory committee deliberations.