OCCUPATIONAL SAFETY AND HEALTH
STANDARD BOARD

PETITION FILE NO. 570

BOARD STAFF EVALUATION

Submitted by: Maryrose Chan, Senior Safety Engineer M. Chan

December 19, 2018

INTRODUCTION

Petition 570 was received on August 8, 2018. The Petition letter dated August 7, 2018 was jointly submitted by Don Zampa, President of District Council of Iron Workers and Greg McClelland Executive Director of Western Steel Council (Petitioner). The Petitioner primarily seeks changes in existing standards to permit the use of "Cone and Bar Barricade (CBB)" to warn employees of an opening that serves as access to an incomplete level via stairs, scaffolds, or other temporary means of access. The Petitioner is also proposing changes to existing standards regarding temporary floor planking, decking, and mid-rails.

BACKGROUND

On April 21, 2017, Eric Berg, a representative of the Division of Occupational Safety and Health wrote a letter to Steve Rank, the Executive Director of Safety & Health for Ironworkers International regarding the use of CBB around floor openings. The letter states that CBB can be used as an additional measure to warn employees about the presence of floor openings provided that the employer complies with applicable existing safety orders.

PETITIONER ASSERTIONS

The Petitioner submitted proposed text to amend Section 1710(b) and (l) (See Petition letter attachment). The Petitioner asserts that the proposed amendments have been thoroughly tested through years of experience, supported by extensive track record of worker hours demonstrating their safety, and do not require vetting by an advisory committee process.

In an e-mail dated October 12, 2018, the Petitioner amended their position on the Petition:

- The Petition is to amend Section 1710 to permit the use, not mandate the use of CBB.
- The language in the August 7, 2018 Petition letter is the proposed change.
- The Petitioner is agreeable to a small work group of stakeholders to discuss the need for the Petition.
- The Petitioner is open to discussing the rationale behind and minor clean-up of the proposed language.
- The Petitioner submitted a video that depicts the CBB procedures: https://www.youtube.com/watch?v=tb5kHeRWLsY&feature=youtu.be

REQUESTED ACTIONS

The Petitioner requested amendments to Section 1710(b) and (l):

- Both planking and decking to be of sufficient strength to carry the working load and be equivalent to structural plank.
- Deletion of the requirement that planking be laid tight.
- Allow the employer to secure planking and decking [over the floor opening] as soon as practicable.
- Amend existing requirements for perimeter safety cable by adding an exception.
- Delay the installation of midrail protection to after metal decking is installed and the floor is ready for turnover to the controlling contractor.
- Define the terms "cone and bar barricade" and "access opening".
- Various technical amendments pertaining to the cutting of metal floor decking to create openings and guarding of openings.
- Regulate the use of cone and bar barricades around floor openings.

STAFF EVALUATION

Section 1710(l) refers to derrick or erection floors, which is defined as an elevated floor of a building or structure that has been designated to receive hoisted pieces of steel prior to final placement. Below is a discussion of the proposed amendments.

1. The Petitioner proposes to amend to Section 1710(l)(1) regarding decking area:

- Existing requirements state that "Planking or decking to be of equivalent strength, shall be of proper thickness to carry the working load. Planking shall be not less than 2 inches thick of full size undressed..." The proposal is for the planking <u>and</u> decking to be of sufficient strength to carry the working load and at a minimum be equivalent to structural planks as defined in Section 1504.

  Board staff does not agree with the Petitioner's proposed amendment but supports amending Subsection (l)(1) to state verbatim Labor Code Sections 7254 and 7258. Labor Code Section 7254 requires temporary wood planking to be of proper thickness, grade and span to carry the working load, but shall not be less than two inches thick, full size undressed. Labor Code Section 7258 requires that metal decking where used in lieu of wood planking shall be of equivalent strength and shall be laid tightly and secured to prevent movement.

  Undressed planks refer to wood planks that have not been planed to provide a uniform flat surface. Structural planks are equivalent to two inches thick full size undressed planks. If amended as proposed, the economic cost impact of replacing two inches thick full size undressed planks with structural planks would have to be considered.

- Remove the requirement that planking shall be laid tight.

  The proposal overlooks Labor Code Sections 7253 and 7258 and renders Section 1710(l)(1) to be not be as effective as the 29 CFR 1926.754(e)(5)(i). The Labor Code and the federal standard require planking to be laid tightly.

- Modify the timeline for securing planking and decking by adding "as soon as practicable."

  29 CFR 1926.754(e)(5)(i) requires metal decking to be secured immediately upon placement, not as soon as practicable.

2. The Petitioner proposes to amend Section 1710(l)(3) regarding peripheral top rail safety cable:

- Add an exception to use peripheral top rail safety cable if a fall protection system engineered by a registered California State Structural Engineer is used.

  Board staff disagrees with the proposed exception. A system designed by a structural engineer does not necessarily mean that the fall protection system meets all applicable existing regulations.

- Delete "other" and adding the word "also" in order to read as "Guardrail protection may also be used if equal protection is provided."

  Board staff does not agree with the proposed change, because it changes the meaning of the standard. The existing text regarding "other guardrail" is intended to mean that other types of guardrails, not just wire rope, can be used as guardrails.

- Change the code section referred in the Note from Section 1710(m)(4) to Section 1670.

  Board staff does not object to amending the Note to change the reference from Section 1710(m)(4) to Section 1670, which refers to fall protection.

3. The Petitioner proposes to amend Section 1710(l)(4) regarding midrail protection:

- Existing requirements state that the midrails be installed as soon as metal decking has been installed and prior to the deck area being used by other trades. The proposal deletes "as soon as the metal decking has been installed; and" from Section 1710(l)(4)(A) and replace the text to require midrail installation after the metal decking installation is complete and the floor is ready for turnover to and acceptance of custody

by the controlling contractor; and prior to the decked area being used by trades other than the steel erector or decking crew.

The proposed amendments would render Section 1710(l)(4)(A) to be not as effective as the federal standard. 29 CFR 1926.760(a)(2) requires that perimeter safety cables (top-rails and midrails) be installed after the metal decking has been installed.

- Add text to Section 1710(l)(4)(B) to define the conditions for "complete" as referred to in proposed Subsection (l)(4)(A)1. "Complete" is to mean that the erector has established that the entire decking process for a specific elevation floor is finished and has been inspected by the inspector of record or other inspecting agent.

  The Board staff disagrees with what is considered as "complete". There could be a long lapse from the time the metal decking has been installed to when the proposed new Subsection (l)(4)(B) is met. The timeline for the installation of midrails should not be dependent on the arrival of the inspector of record.

4. The Petitioner proposes to amend Section 1710(l)(5) regarding the installation of decking:

   - Remove the requirement for the metal decking to be immediately secured upon placement and replace the timeline to "as soon as practicable."

     The proposed amendment would render Section 1710(l)(5) to be not as effective as 29 CFR 1926.754(e)(5)(i) which requires that the metal decking be secured immediately upon placement. The term "as soon as practicable" is vague.

5. The Petitioner proposes amendments to Section 1710(l)(6) regarding openings:

   - Replace "and" with "or" to read "A metal decking hole or opening shall not be cut until immediately prior to..."

   - Remove "permanently filled" and "to fulfill its specific use" from the requirement to not cut openings or holes until the holes or openings can be immediately filled by permanent structure or equipment..."

   - Remove the reference for the strength of the cover.

     The intent of the current standard is to not create openings until it becomes necessary in order to permanently install the structure or equipment it is meant to house. This is to limit the exposure to the opening. As an alternative, the standard permits covering the opening that was created provided that the cover meets the strength requirements of Section 1632(b).

> The proposed change means that the floor opening can be created and filled with temporary equipment or structure. This poses a danger because the temporary equipment or structure may not completely cover the hole and may not have the structural integrity of the permanent structure or equipment.

6. The Petitioner proposes to add new Section 1710(l)(8) regarding the proposed use of CBB. Since the CBB use as proposed by the Petitioner is a new concept, there is no comparable federal standard. Below is a more detailed discussion of the CBB instead of the point by point discussion.

The Petitioner proposes a new term "access opening" to be defined as "any floor opening necessary to allow access to an incomplete level via ladders, stairs, scaffold or other temporary means of access."

Openings present a falling person and/or falling object hazard. Federal standards address fall hazards created by opening by covering the opening, or utilizing fall protection systems (guardrails, safety net systems, personal fall arrest systems, fall restraint systems) or, under specific circumstances, by controlled decking zones.

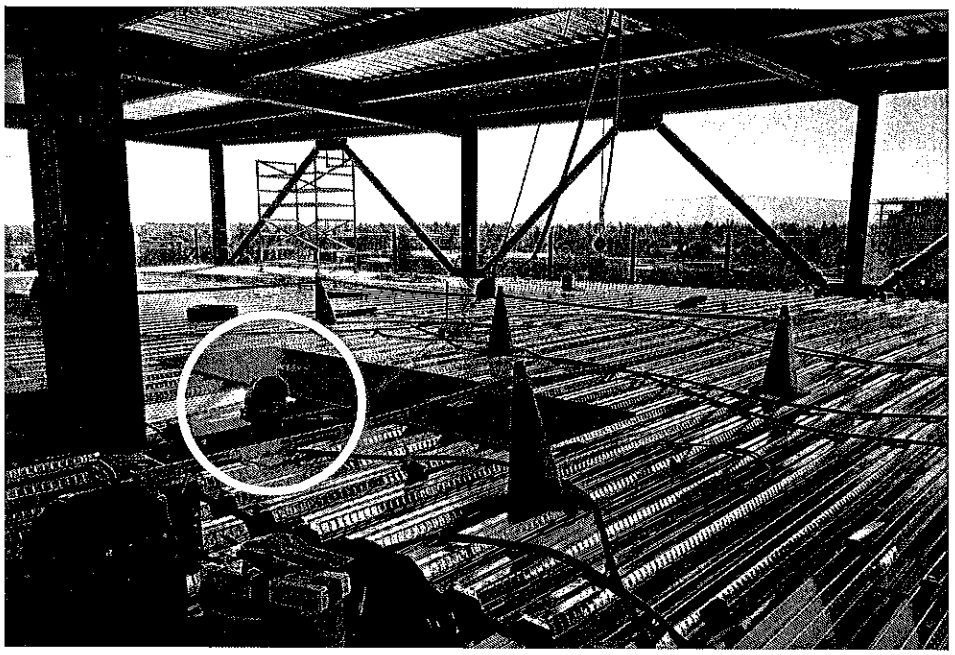
Current state and federal orders require employers to delay cutting the holes until it becomes necessary to create the opening for the equipment or structure. This lessens the exposure time. The preferred method of guarding the opening is to use a substantial cover thereby eliminating the opening. The Petitioner is proposing the use of CBB as an additional tool to address the hazards posed by openings that the Petitioner believes must remain uncovered, because it is impractical to cover them.

The CBB consists of high visibility fluorescent green cones (approximately 27 inches high marked "DANGER ACCESS OPENINGS") and plastic rods. The cones are attached to retractable lightweight plastic pipes or rods, approximately 6 to 10 feet. The Petitioner chose fluorescent green cones instead of orange cones because the fluorescent green color is less common at construction jobsites and therefore more visually identifiable to workers. The plastic rods are not heavy and rigid, making them easy to install and carry, but rigid enough to prevent the demarcation line from shifting.

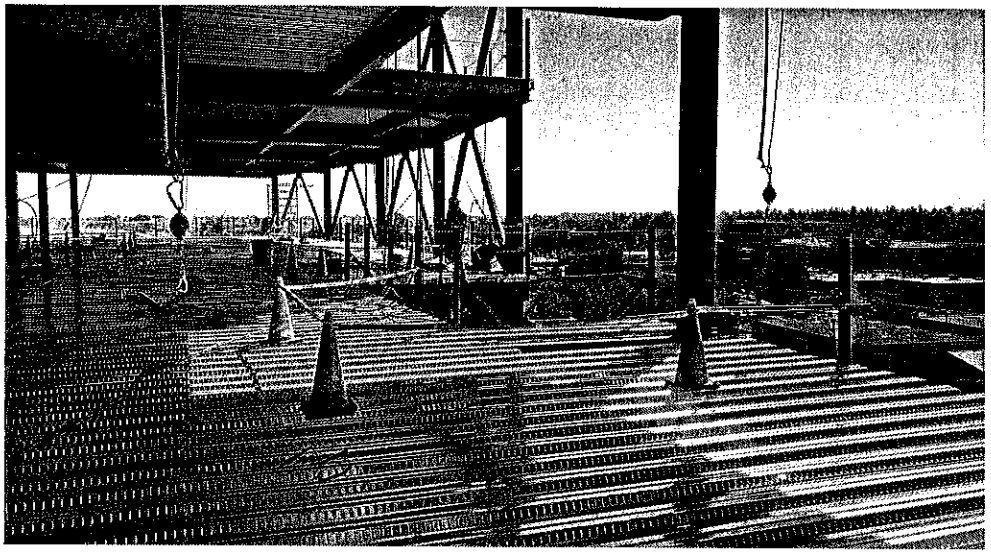
The purpose of the CBB is to demarcate the area within 6 to 10 feet from a floor opening. The demarcated area delineates where fall protection is required. The area outside the demarcated area is considered to be outside of the zone of danger. If the employee is 6 to 10 feet away from the opening, the employee would presumably not fall into the opening.

CBB may be beneficial for work under Section 1635(c)(2), which is work in progress that requires floor openings to be uncovered. The employees actively working at or near the opening are required to be protected from falls, typically by using personal fall protection equipment. To protect other steel erection workers who are in the area (passing through or more than 6 feet away), Title 8, Section 1635(c)(2) states that the floor areas adjacent to the floor opening shall be barricaded or the floor opening shall be covered when not attended by steel erection personnel.

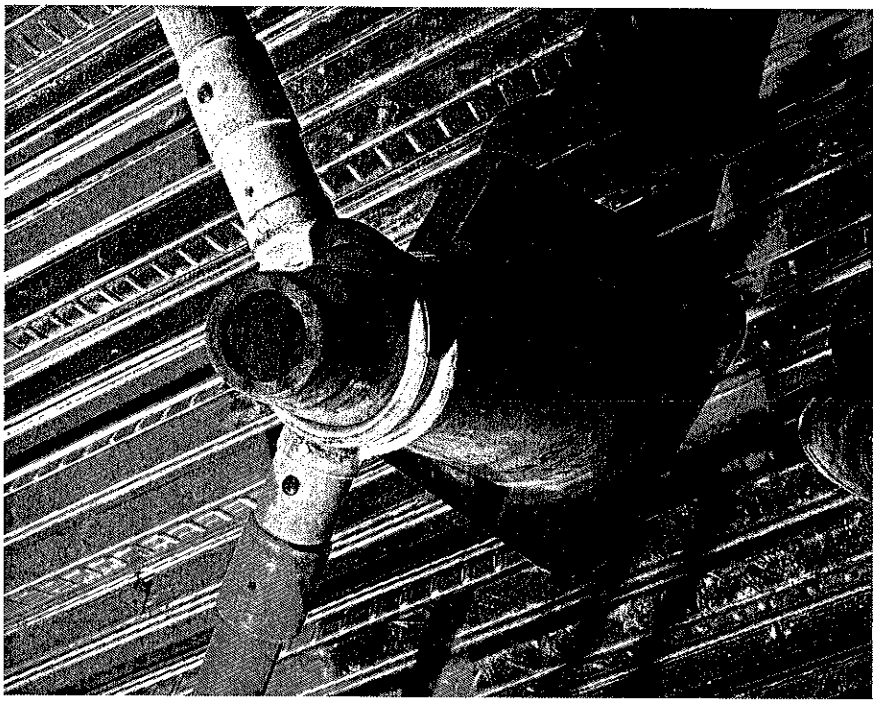
The activities listed in proposed new Section 1710(l)(8)(A) may under certain circumstances be activities that fall under Section 1635(c)(2). The proposed language is too broad to be effective. The proposed practices relating to the use of CBB listed as Section 1710(l)(8)(B) to (F) should be considered for inclusion if CBB use becomes part of Title 8.



Photograph 1: Employee working inside the Cone and Bar Barricade wearing personal fall arrest system.



Photograph 2: Typical set-up of the CBB. The self-retracting lifeline anchored to the horizontal I-Beam is used for personal fall protection.



Photograph 3: Photograph of how the rods are secured to the cone.

During the October 9, 2018 on-site visit arranged by the Petitioner, Board staff interviewed employees and safety managers of Herrick Construction. Below is a sample procedure utilized by Herrick Construction employees when setting up the CBB for work that will create an opening.

1. Set up the CBB so that the demarcated area will be approximately 6 to 10 feet from the planned opening.
2. Install the appropriate fall protection system (could include self-retracting lifelines) in select locations inside the demarcated area.
3. Stage the work area to include the tools and equipment that will be needed to work in the demarcated area.
4. Ironworkers will use personal fall protection system(s) as needed then proceed to untack and drag the metal deck, thereby creating the floor opening.
5. If needed, the CBB demarcated area can be resized.
6. If the ironworker needs to step outside the demarcated area, he must unhook from the tie off point outside the CBB.
7. The ironworkers will utilize a fall arrest or fall restraint system to complete the work inside the demarcated area.
8. Depending on the task and design, the ironworker(s) will cover the opening or reinstall the metal deck.
9. The CBB will be removed upon completion of the work.

According to representatives from Herrick Construction, since the implementation of CBB in 2008, there have been no accidents due to floor openings. The company also noted a reduction in soft tissue injuries due to lifting. The employees interviewed were in favor of the usage of the CBB because of the ease of use, time saved, and increased visibility of the hazard. In a fast paced job site, employees felt more secure seeing the opening instead of relying on a cover that may or may not be properly secured or labeled. The fluorescent green CBB alerts them of the presence of the opening that is clearly visible (not covered). Since everyone at the jobsite is trained on the use of CBB, the ironworkers have a clear understanding of what is expected of them and respect the CBB.

An effective safety program is important to ensure success in the implementation of the CBB. Employees need to be trained on the procedures to set up the CBB and employers have to ensure the adherence to said procedures. The Ironworkers International recognized this and developed a training video that is part of the apprenticeship program to become an Ironworker: https://www.youtube.com/watch?v=tb5kHeRWLsY&feature=youtu.be

Board staff believes that the use of CBB relies on a combination of the elements: readily identifiable cones and bars (pipe or rod), fall protection systems, covers, and training. The CBB is a communication tool that alerts the workers of the presence of a floor opening and where fall protection is required. CBB should not be used without a fall protection component.

Limited use of CBB may be useful in communicating the hazards by visually communicating the presence and location of openings where work is in progress, thereby signaling to workers that work inside the demarcated zone requires fall protection.

Relevant Standards

Federal Standards

29 CFR 1926 Subpart R – Steel Erection

- 1926.751 - Definitions.
  Section contains the definition for opening and derrick floors.

- 1926.754 - Structural steel assembly.
  Section contains the requirements for installation metal decking [1926.754(e)(5)] and derrick floors [1926.754(e)(6)].

- 1926.760 - Fall protection.
  Section contains fall protection requirements to protect each employee engaged in steel erection activity who is walking/working with an unprotected side or edge more than 15 feet above a lower level.

California Labor Code and Standards

- Sections 7250, 7253, 7254, and 7258 of the California Labor Code contain laws regarding steel erection construction.
- California Code of Regulations, Title 8 Section 1632(b) applies to floor opening at location where steel erection work is taking place and Title 8 Section 1635(c) applies to where work is in progress that requires floor openings to be uncovered.

Consensus Standard

- ANSI/ASSP A10.13-2011 (R2017) Safety Requirements for Steel Erection.

Position of Division

The Division recommends that an advisory committee be convened to consider the Petitioner's proposal subject to the following:

- The proposed changes to Subsections 1710(l)(1), 1710(l)(3), 1710(l)(4), 1710(l)(5), and 1710(l)(6) do not need to be considered because they do not provide safety equivalent to that of current Title 8 standards, conflict with the Labor Code, and/or are not commensurate with Federal OSHA standards.

- The use of CBB systems should be limited to situations where work is in progress that requires floor openings to be uncovered. The proposals to specify the distance of barricades from openings, require warning labels on CBB systems, and require training of employees should be considered. The proposal to clarify in Subsection 1710(l) that the provisions of Subsection 1635(c) apply to decking and planking during structural steel erection work should also be considered.

Analysis

Many of the proposed amendments to existing subsections of Section 1710 would render California standards to be inconsistent with the California Labor Code or be not as effective as the federal standards.

The proposed addition of the use of CBB procedures under Section 1635(c)(2) does not violate existing regulations. Since the CBB is currently in use by the steel erection industry in California, developing rules for the use of CBB would be beneficial to prevent a dangerous misinterpretation that the CBB is a substitute for fall protection. Failure to utilize fall protection with CBB could subject workers to serious injury or fatality. Demarcation of the zone of danger is not the same as fall protection.

STAFF RECOMMENDATION

Board staff recommends denying the proposed amendments to Section 1710(b), 1710(l)(1), 1710 (l)(3), and 1710(l)(4) to (l)(6) that would render the California standards to be inconsistent with the Labor Code or be not as effective as the federal standards. However, Board staff does support the proposed change to amend the Note for Section 1710 (l)(3).

Board staff is in support of adding the CBB as a method of communicating the location of hazards (floor openings) and where control measures are required. Board staff recommends granting the Petition, in part, for the use of an advisory committee process to confirm necessity and help develop proposed language for the use of the CBB for work covered under Section 1635(c).