



Memorandum

To: Christina Shupe, Executive Officer
Occupational Safety and Health Standards Board
Date: December 18, 2019

From: Eric Berg, Deputy Chief *Jason Denning* for Eric Berg
Division of Occupational Safety and Health

Subject: Evaluation of Petition No. 578 to amend title 8 section 1710(l)(7)

1.0 INTRODUCTION AND BACKGROUND

On August 5, 2019, the Division of Occupational Safety and Health (Cal/OSHA) received a petition from Richard Manual of Lancaster Burns Construction, Inc. The petitioner requests a change to title 8 section 1710(l)(7) regarding temporary flooring requirements during structural steel erection.

Labor Code section 142.2 permits interested persons to propose new or revised standards concerning occupational safety and health, and requires the Occupational Safety and Health Standards Board (Standards Board) to consider such proposals and render a decision no later than six months following receipt.

California Labor Code section 147 requires the Standards Board to refer to Cal/OSHA for evaluation any proposed occupational safety and health standard. Cal/OSHA is required to submit a report on the proposal within 60 days of receipt.

2.0 PETITIONER'S PROPOSED AMENDMENTS TO SUBSECTION 1710(l) TEMPORARY FLOORING - SKELETON STEEL CONSTRUCTION IN MULTISTORY BUILDINGS.

Subsection 1710(l) contains requirements for temporary flooring during construction of steel structures. The subsection requires temporary floors be installed no more than 30 feet below where employees are working on the structure.

The petitioner requests an exception be added to section 1710(l)(7) to allow steel structures to be built without temporary floors provided the area underneath the work is barricaded and all steel erection work is done from mobile elevating work platforms or aerial lifts. The addition proposed by the petitioner is shown below in underline format.

Subchapter 4. Construction Safety Orders
Article 29. Erection and Construction
§1710. Structural Steel Erection.
* * * * *

(I) Temporary Flooring - Skeleton Steel Construction in Multistory Buildings.
* * * * *

(7) Where skeleton steel is being erected, a tightly planked and substantial floor shall be maintained within two stories or 30 feet, whichever is less, below and directly under that portion of each tier of beams on which any work is being performed.

EXCEPTION to subsection 1710(I)(7). Temporary flooring is not required when the area below steel erection is barricaded to prevent access and connecting operations are being performed from equipment at ground level utilizing mobile elevating work platforms and aerial lifts.

NOTE: Where a planked floor is not practical, subsection (I)(2) of this section applies.

(A) When gathering and stacking temporary floor planks, the planks shall be removed successively, working toward the last panel of the temporary floor so that the work is always done from the planked floor.

(B) When gathering and stacking temporary floor planks from the last panel, the employees assigned to such work shall be protected by an approved personal fall protection system attached to a catenary line or other substantial anchorage.

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3.0 APPLICABLE CALIFORNIA LABOR CODE SECTIONS

The California Labor Code contains specific requirements for temporary floors during the construction of steel framed buildings. The requirements are similar to title 8 subsection 1710(I)(7) and require temporary floors within two floors below where work is being done.

California Labor Code
Division 5. Safety in Employment
Part 3. Safety on Buildings
Chapter 1. Buildings under Construction or Repair
Article 4. Structural Steel Framed Buildings
* * * * *

§7253. There shall be a tight and substantial temporary floor within two floors below and directly under that portion of each tier of beams on which erection, riveting, bolting, welding or painting is being done. For operations of short duration or of exposure to falling, safety belts shall be required as set forth in Section 7265.

Further, California Labor Code sections 7266 and 7267 state that violations of planking or net requirements are a misdemeanor enforced by Cal/OSHA.

§7266. No person shall proceed with any work assigned to or undertaken by him, or require or permit any other person to proceed with work assigned to or undertaken by either, unless the planking or nets required by this article are in place. Violation of this section is a misdemeanor.

§7267. The Division of Occupational Safety and Health shall enforce this article.

4.0 APPLICABLE FEDERAL OSHA REGULATIONS

Federal OSHA regulations for structural steel erection are in title 29 Code of Federal Regulations part 1926 subpart R Steel Erection. Similar to title 8 subsection 1710(l)(7), 29 CFR 1926.754, requires temporary flooring be installed no more than 30 feet below erection work. The applicable subsections are the following:

29 CFR Part 1926. Safety and Health Regulations for Construction
Subpart R: Steel Erection.

§ 1926.754 Structural Steel Assembly.

(a) Structural stability shall be maintained at all times during the erection process.

(b) The following additional requirements shall apply for multi-story structures:...

(3) A fully planked or decked floor or nets shall be maintained within two stories or 30 feet (9.1 m), whichever is less, directly under any erection work being performed.

5.0 APPLICABLE CONSENSUS STANDARDS

The American National Standards Institute (ANSI) and the American Society of Safety Professionals (ASSP) address the hazards of steel erection in ANSI/ASSP A10.13 (R2017) *Safety Requirements for Steel Erection*. Specific requirements for the installation of temporary floors are included in section 10 of the 2011 edition of this standard. The applicable portions of the standard below are similar to title 8 section 1710(l)(7) and 29 CFR 1926.754(b)(3):

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

10. METAL DECK AND TEMPORARY FLOORING

10.2 The following additional requirements shall apply for multi-story structures:

10.2.3 A fully planked or decked floor or nets shall be maintained within two floors or 30 feet (9.1m), whichever is less, directly under any erection work being performed.

6.0 HAZARDS TO EMPLOYEES WORKING ON AND AROUND MULTISTORY SKELETON STEEL FRAMES IN THE ABSENCE OF TEMPORARY FLOORING

The hazards relating to working at elevation during structural steel erection include falls and being struck by falling objects.

Lack of temporary flooring increases the distance and severity of injury due to an employee falling or an employee being struck by a falling object. In addition to death, potential injuries to employees include:

1. Concussions
2. Fractures
3. Crushing Injuries
4. Contusions
5. Lacerations
6. Avulsions
7. Abrasions

7.0 PETITIONER'S BASIS FOR AMENDMENT TO REGULATION

The petitioner makes the following claims to support their proposal to add an exception to subsection 1710(l)(7):

- Subsection 1710(l)(7) is ambiguous as to when temporary flooring is required. Cal/OSHA staff provided contradicting interpretations of the requirements of 1710(l)(7) to the petitioner.
- Subsections 1710(m)(1)(A) and 1710(m)(1)(b), which contain requirements for connecting beams and other structural steel members, do not require temporary flooring.
- Installing temporary flooring can be more hazardous than not installing temporary flooring because:
 - Temporary flooring does not eliminate fall hazards.
 - Temporary flooring forces steel connectors to climb columns and walk on beams.
- Equal or greater safety to the temporary floor requirements can be met by:
 - Barricading the area underneath steel erection work to prevent falling object hazards
 - Making structural steel connections with workers in aerial lifts and not on the structural steel.

8.0 ANALYSIS

8.1 The petitioner's request would create a conflict between subsection 1710(l)(7) and the California Labor Code

California Labor Code section 7253, quoted above in part 5.0 of this evaluation, requires temporary floors within two floors below steel erection work. The only exception is for work of short duration. The Occupational Safety and Health Appeals Board determined that short duration work involves tasks taking less than two minutes.¹ Since steel erection from aerial lifts takes multiple days, the work to be covered by the proposed exception to subsection 1710(l)(7) from the petitioner will almost never be short duration work. As a result, the proposed exception to allow unlimited steel erection work from aerial lifts without temporary flooring below would directly conflict with California Labor Code section 7253.

Regulations in conflict with statute are not allowed by Government Code section 11349.1, which requires rules to be consistent with statutes. As the petitioner's proposal is in direct conflict with section 7253 of the California Labor Code, it is not appropriate, and is in fact outside of Board's discretion to consider.

8.2 Subsection 1710(l)(7) is not ambiguous

The petitioner claims that subsection 1710(l)(7) is not clear as to when temporary floors are required or not required. However, the plain language of subsection 1710(l)(7) is clear and requires temporary floors within 30 feet or two stories, whichever is less, under beams where work is being performed.

Subsection 1710(l)(2) (referenced in a note to subsection (1710(l)(7))) provides the only exception to installing temporary floors at least every 30 feet. When structures are not adaptable to temporary floors, 1710(l)(2) allows for the use of scaffolds, approved fall protection, or safety nets to be used in lieu of temporary floors.

Subchapter 4. Construction Safety Orders
Article 29. Erection and Construction
§ 1710. Structural Steel Erection.

* * * * *

(l) Temporary Flooring - Skeleton Steel Construction in Multistory Buildings.

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(2) On buildings or structures not adaptable to temporary floors, and where scaffolds or approved fall protection is not used, safety nets shall be installed and

¹ (*B.T. Manchini Co., Inc.*, OSHAB 85-1696, Decision After Reconsideration (Dec. 24, 1987) [10 to 20 seconds]; *Pacific Roof Structures, supra* [1 minute exposure during each 3 1/2 minute task]; *Peterson Builders, Inc.*, OSHAB 91-057, Decision After Reconsideration (Jan. 24, 1992) [1 to 1 1/2 minutes]; *Ruffco Construction*, OSHAB 90-1006, Decision After Reconsideration (May 31, 1991) [1 to 2 minutes].) In *Anning-Johnson Company*, OSHAB 80-517, Decision After Reconsideration (June 25, 1982)

maintained whenever the potential fall distance exceeds two stories or 30 feet, whichever is less.

* * * *

8.3 Confusion was caused by the employee exposure determination and not by the language of subsection 1710(l)(7)

In order to enforce a title 8 requirement, Cal/OSHA must show employee exposure to a violative condition. The confusion that the petitioner notes regarding the application of subsection 1710(l)(7) resulted from differing opinions on whether Cal/OSHA could meet its burden to show employee exposure. This requirement is established by case law and not by title 8 (*Benicia Foundry & Iron Works, Inc.*, Cal/OSHA App. 00-2976 Decision After Reconsideration (Apr. 24, 2003), citing *Moran Constructors, Inc.*, Cal/OSHA App. 74-381, Decision After Reconsideration (Jan. 28, 1975).

Because the petitioner's employees were not working on the steel structure, but rather from aerial lifts, and the area underneath the work was barricaded, there was disagreement on whether Cal/OSHA could establish employee exposure to a violative condition of subsection 1710(l)(7). There was no disagreement on the requirements of subsection 1710(l)(7).

Changes to the language of subsection 1710(l)(7) will not have any impact on determining employee exposure and thus will not reduce any confusion regarding application of subsection 1710(l)(7).

8.4 There is no need for subsection 1710(m)(1)(A) and (m)(1)(B) to be duplicative of 1710(l)(7)

The petitioner asserts that subsections 1710(m)(1)(A) and (m)(1)(B) do not specifically state that temporary flooring is required. However, the petitioner does not explain why these subsections should be duplicative of subsection 1710(l)(7). Subsections 1710(m)(1)(A) and (m)(1)(B) are as follows:

§ 1710. Structural Steel Erection.

* * * *

(m) Working and Traveling on the Skeleton Steel of Multistory Buildings or Structures.

(1) Connecting.

(A) When connecting beams or other structural members at the periphery or interior of a building or structure where the fall distance is greater than two stories or 30 feet, whichever is less, iron workers shall be provided with and use a personal fall protection system as described in Article 24 tied-off to either columns, pendant lines secured at the tops of columns, catenary lines, or other secure anchorage points.

(B) At heights over 15 and up to 30 feet above a lower level, connectors shall be provided with a personal fall arrest system, positioning device system or fall restraint system and wear the equipment necessary to be able to be tied off; or be provided with other means of protection from fall hazards in accordance with subsection (m).

* * * *

There is no need for subsection 1710(m) to duplicate the requirements of subsection 1710(l)(7) in order to clarify the meaning of subsection 1710(l)(7) since the requirements of subsection 1710(l)(7) are clear as a standalone requirement. Additionally, duplication of requirements in regulations is not allowed pursuant to Government Code section 11349.1:

Government Code

§ 11349 Definitions

* * * *

(f) "Nonduplication" means that a regulation does not serve the same purpose as a state or federal statute or another regulation...

* * * *

§ 11349.1.

(a) The office shall review all regulations adopted, amended, or repealed pursuant to the procedure specified in Article 5 (commencing with Section 11346) and submitted to it for publication in the California Code of Regulations Supplement and for transmittal to the Secretary of State and make determinations using all of the following standards:

- (1) Necessity.
- (2) Authority.
- (3) Clarity.
- (4) Consistency.
- (5) Reference.
- (6) Nonduplication.

* * * *

8.5 The petitioner's requested change is less effective than 29 CFR 1926.754(b)(3)

The proposed change by the petitioner is also less effective than federal OSHA regulations. Pursuant to CFR 1926.754(b)(3), a fully planked or decked floor or nets shall be maintained within two stories or 30 feet, whichever is less, directly under any erection work being performed. This subsection addresses fall hazards for employees conducting steel erection work. The proposed exception to 1710(l) is in direct conflict to this requirement, as it would allow employees to conduct steel erection work at any height without the presence of a floor or net.

The petitioner argues that fall hazards are addressed by work being conducted from aerial devices by employees utilizing personal fall protection. However, the CFR and CCR title 8 regulations both require the use of personal fall protection for employees performing steel connecting work and work other than connecting at 30 and 15 feet respectively in addition to the installation of floors or nets.

8.6 Structural stability can be negatively affected if flooring is not required.

Flooring (both temporary and finished) is a structural element (known as a “diaphragm”) that contributes to the ability of a structure and its components to resist lateral loads.

If floors are installed at less than 30-foot intervals, structural rigidity can be affected. The greater the interval between floors, the lesser the structural rigidity, resulting in greater deflection of the structure when loaded laterally (commonly from wind and seismic loading). In addition, moving equipment such as cranes, forklifts, boom lifts, and elevating work platforms, may inadvertently contact and impose a sudden lateral load on the structure. Deflection of the structure resulting from these types of lateral loads may be greater when flooring is installed at less than 30-foot intervals compared to a structure with flooring installed at 30-foot intervals. Employees working on aerial lifts adjacent to structural elements with excessive deflection could be struck by or pinched between actively deflecting structural members.

The petitioner notes that structures can be professionally engineered in such a manner that they do not rely on metal decking or planking for structural integrity during erection. However, the petitioner’s proposed amendment does not require structures to be professionally engineered to be stable and rigid in the absence of temporary flooring. Thus, the proposed exception makes the regulation less safe.

The petitioner also states that their proposal is intended for three-story buildings with a maximum height of 46 feet. However, the proposed exception did not include any such height limitation. The proposed language would allow omission of temporary flooring for buildings of much greater heights. In those cases, the structural integrity and rigidity could be more significantly impacted.

8.7 Employee Falls from Elevation to Lower Levels

Floors provide engineered fall protection to employees working above as a backup to personal fall protection equipment. Engineered fall protection, such as floors, is more protective than personal fall protection since it is not dependent on trained employees taking the correct action to function. The petitioner’s proposal removes engineered fall protection and relies strictly on personal fall protection and would make the regulation less protective.

8.8 Objects Falling Onto Employees

Temporary flooring provides overhead protection and limits the fall distance of falling object, minimizing harm or damage. When installation of temporary flooring is delayed beyond the 30-foot limit, the crews that follow the connectors can also be exposed to hazards from above, resulting from falling objects.

The petitioner proposes to require areas beneath steel erection work to be barricaded to protect employees from overhead protection. However, as indicated in the following explanation from a previous Standards Board rulemaking, insubstantial materials such as caution tape would be sufficient to serve as a barricade.

While the term "barricade" is not defined in CSO, Section 1504, Definitions, it is used in other Title 8 construction standards without confusion. For example, in Section 1541 regarding excavation, subsection (l)(2), in part, states that, "Adequate barrier physical protection shall be provided at all remotely located excavations. All wells, pits, shafts, etc., shall be barricaded or covered." In common usage, the dictionary definition for the term "barricade" means to obstruct, block or limit passage.

Caution or red danger tape would be a sufficient barricade. [emphasis added]²

Based on the explanation above, the petitioner's proposal for barricading areas beneath steel erection work would be less protective than solid floors.

9.0 CONCLUSION: THE PETITION SHOULD BE DENIED

Cal/OSHA recommends the petition be denied for the following reasons:

- The proposed exception contradicts both the California Labor Code and the corresponding Federal OSHA regulation.
- The current language of subsection 1710(l)(7) is clear.
- There is no need for other regulations to be duplicative of subsection 1710(l)(7)
- The proposed exception from the petitioner makes subsection 1710(l)(7) less protective as it :
 - Eliminates engineered fall protection,
 - Reduces overhead protection, and
 - Reduces stability on certain structures.

² California Occupational Safety and Health Standards Board. Final Statement of Reasons, California Code of Regulations, title 8 section 1635(c) of the Construction Safety Orders. December 15, 2005. Available at: <https://www.dir.ca.gov/oshsb/flooropeningsteelFSOR.pdf>