

**OCCUPATIONAL SAFETY
AND HEALTH STANDARDS BOARD**

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NOTICE OF PROPOSED MODIFICATIONS TO
CALIFORNIA CODE OF REGULATIONS

TITLE 8: Sections 1711, 1712, 1713 and 1721
of the Construction Safety Orders

Reinforcing Steel Concrete Construction and Post-Tensioning Operations

Pursuant to Government Code Section 11346.8(c), the Occupational Safety and Health Standards Board (Standards Board) gives notice of the opportunity to submit written comments on the above-named standards in which modifications are being considered as a result of public comments and/or Board staff consideration.

On December 15, 2016, the Standards Board held a Public Hearing to consider revisions of Title 8, Sections 1711, 1712, 1713 and 1721. The Standards Board received written and oral comments on the proposed revisions. The proposal has been modified as a result of these comments and Board consideration.

Section 1711

Subsection (c)(2)

This subsection is modified to state that the controlling contractor is exempt from providing a work area that is drained and graded where it is infeasible due to space constraints in dense metropolitan areas.

Subsection (d)(6) [new]

Subsection (d)(6) is added to require the reinforcing steel contractor to flag specific areas of the erection level for their work activity.

A copy of the full text of the standards, with these modifications clearly indicated, is attached for your information. In addition, a summary of written comments regarding the original proposal and staff responses is included.

Pursuant to Government Code Section 11346.8(d), notice is also given of the opportunity to submit comments concerning the addition to the rulemaking file of the following document relied upon:

Letter from Mr. Steven L. Rank, Executive Director of Safety and Health, International Association of Bridge, Structural, Ornamental and Reinforcing Ironworkers (IABSORI), Re: Estimated Costs of Injuries Incurred During Reinforcing Steel and Post-Tensioning Activities, dated August 28, 2016.

This document is too cumbersome or impractical to publish in Title 8 (or may include copyrighted items, (i.e., ANSI standards)). Therefore, it is proposed to incorporate the document by reference. Copies of this document are available for review during normal business hours at the Standards Board Office located at the address listed below.

Any written comments on these modifications must be received by 5:00 p.m. on April 24, 2017, at the Occupational Safety and Health Standards Board, 2520 Venture Oaks Way, Suite 350, Sacramento, California 95833 or submitted by fax to (916) 274-5743 or e-mailed to oshsb@dir.ca.gov. This proposal will be scheduled for adoption at a future business meeting of the Standards Board.

The Standards Board's rulemaking files on the proposed action are open to public inspection Monday through Friday, from 8:00 a.m. to 4:30 p.m., at the Standards Board's office.

The Standards Board will have rulemaking documents available for inspection throughout the rulemaking process on its web site. Copies of the text of the regulations in an underline/strikeout format and the Notice of Proposed Modifications can be accessed through the Standards Board's website at <http://www.dir.ca.gov/oshsb>.

Inquiries concerning the proposed changes may be directed to the Executive Officer, Marley Hart, at (916) 274-5721.

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STANDARDS BOARD

Date: April 7, 2017

Marley Hart, Executive Officer

ATTACHMENT 1

PROPOSED MODIFICATIONS TO REGULATORY TEXT

(Modifications from initial proposal are indicated in double underline wording for new language and double strikeout for deleted language.)

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Construction Safety Orders
Article 29. Erection and Construction

Amend Section 1711 to read as follows:

§1711. ~~Oiling Forms~~ Reinforcing Steel and Post-Tensioning in Concrete Construction.

~~The oiling of floor panels that are in place shall not be done until the carpentry work on the form has been completed.~~

(a) Scope and Application.

(1) This section sets forth the requirements for the protection of employees associated with the use of reinforcing steel assemblies used in the construction of concrete and masonry structures including post-tensioning operations.

(2) The duties of controlling contractors under this section include the duties specified in Section 1711(c), (d), (e)(5), (f), (g)(6), (h)(1), (4), and (5), and Section 1717(f).

NOTE 1: Additional requirements for reinforcing steel and concrete construction are contained in Article 20 and Article 29 of these Orders.

NOTE 2: Other relevant provisions in the GISO and CSO may apply to concrete and masonry construction operations.

(b) Definitions.

Competent Person. One who is capable of identifying existing and predictable hazards in the surroundings or working conditions which are unsanitary, or dangerous to employees, and who has authorization to take prompt corrective measures to eliminate them.

Controlling Contractor. A prime contractor, general contractor, construction manager or any other legal entity which has the overall responsibility for the construction of the project, including planning, quality and completion.

Dead Load. A constant load, without load factors, due to the mass (weight) of members, the supported structure and permanent attachments or accessories.

Falsework. Formwork to support concrete and placing operations for supported slabs of concrete structures, including all supporting members, hardware and bracing.

Flying Deck Forms. A prefabricated formwork system for floor slabs incorporating support that is moved in large sections by mechanical equipment (crane, forklift, etc.).

Formwork. The total system of support for freshly placed or partially cured concrete, including the mold or sheathing (form) that is in contact with the concrete as well as all supporting members including shores, reshores, hardware and braces.

Post-tensioning Operations. A method of stressing reinforced concrete in which tendons running through the concrete are tensioned after the concrete has hardened.

Qualified Person, Attendant or Operator. A person designated by the employer who by reason of training, experience or instruction has demonstrated the ability to safely perform all assigned

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duties and, when required, is properly licensed in accordance with federal, state, or local laws and regulations.

Qualified Rigger. A rigger who meets the criteria for a qualified person.

Reinforced Concrete. A composite material in which the concrete provides the material's compressive strength, while the reinforcing in the form of additional embedded material provides the tensile strength and/or ductility.

Reinforcing Ironworker. A worker primarily engaged in the hoisting, rigging, field fabrication, moving, and installation of reinforcing steel assemblies, members, post-tensioning cables and related equipment. Reinforcing steel activities include but are not limited to: off-loading and material handling of reinforcing components; fabrication, pre-assembly, and placement of reinforcing steel columns, beams, joists, mats, welded wire mesh, curtain-walls, and the placement of post-tensioning cables.

Reinforcing Steel Assemblies. Vertical and horizontal columns, caissons, walls, drilled piers, mats, and other similar structures. For purposes of this standard, reinforcing steel includes rods, bars, or mesh made from composite and/or other materials.

Reshores. The temporary vertical supporting members that are placed or left in place when the original supporting shores or posts for the formwork are removed. The reshores are used to support partially cured concrete and other construction loads.

Slip Form. A form that is moved as concrete is placed; slides without being detached to form walls or other concrete structures.

Stressing Jacks. Portable hydraulic devices that pull the tendons associated with post-tensioning concrete to create a permanent tension load.

Tendon. A metal element, usually of steel such as wire, stranded components (such as wires), bars or rods used in pre-stressing or post-tensioning concrete.

(c) Site Access and Layout. The controlling contractor shall ensure that the following is provided and maintained:

(1) Adequate access roads into and through the site for the safe delivery and movement of derricks, cranes, trucks, other necessary equipment, and the material to be erected and means and methods for pedestrian and vehicular control.

EXCEPTION: This requirement does not apply to roads outside of the construction site.

(2) Except where infeasible due to space constraints in dense metropolitan areas, ~~A~~ a firm, properly graded, drained area, readily accessible to the work with adequate space for the safe assembly, rigging and storage of reinforcing and post-tensioning materials and the safe operation of the reinforcing contractor's equipment.

(3) Adequate exterior platform for landing materials on the floors of multi-tiered buildings.

EXCEPTION 1: Where, the design, structure, or space constraint precludes the installation of exterior platforms.

EXCEPTION 2: Where the design of the structure allows for the safe landing of materials without the exterior platform.

(4) Adequate benching and/or shoring in accordance with the provisions of Sections 1541 and 1541.1 prior to the commencement of reinforcing operations in excavations and/or trenches.

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(d) Written Notifications Prior to Commencement of Reinforcing Steel Activities.

Before authorizing the commencement of reinforcing steel activities, the controlling contractor shall ensure that the reinforcing steel contractor on the project is provided with the following written notifications:

(1) Formwork and falsework have been inspected to meet the design requirements by a competent person of the installing formwork/falsework contractor prior to, during, and immediately after the installation of reinforcing steel and placement of the concrete.

(2) The structural stability of vertical formwork, elevated decks, and other working/walking surfaces are adequately braced, guyed, or supported in accordance with Sections 1713 and 1717 to allow safe access of reinforcing employees, materials, and equipment.

(3) The benching and/or shoring for excavations have been inspected by a competent person.

(e) Stability Requirements for Vertical and Horizontal Columns, Walls, and Other Reinforcing Assemblies.

(1) Reinforcing steel for walls, piers, columns, prefabricated reinforcing steel assemblies and similar vertical structures shall be guyed, braced or supported to prevent collapse.

(2)(A) Systems for guying, bracing, or supports shall be designed by a qualified person.

(B) Guys, braces, and supports shall be installed and removed as directed by a competent person.

(3) Reinforcing steel shall not be used as a guy or brace.

(4) Wire mesh rolls shall be secured to prevent dangerous recoiling action.

(5) The controlling contractor shall prohibit other construction processes below or near the erection of reinforcement assemblies until they are adequately supported and/or secured to prevent structural collapse.

(6) The reinforcing steel contractor shall flag specific areas of the erection level for their work activity. The guying and/or bracing shall be in place before the release of the reinforcing assembly from the hoist rigging.

(f) Requirements for Impalement Protection and Custody of Protective Covers.

(1) Employees shall be protected from the hazards of working around or over exposed, projecting reinforcing steel or other similar projections in accordance with the provisions of Section 1712.

(2) When protective covers are provided by the reinforcing steel contractor, they shall remain in place after reinforcing steel activities have been completed to protect workers from other trades only if the controlling contractor or its authorized representative:

(A) Has directed the reinforcing steel contractor to leave the protective covers in place; and

(B) Has inspected and accepted control and responsibility for the protective covers; or

(C) Has placed control and responsibility for the protective covers on another contractor other than the reinforcing steel contractor.

NOTE to SUBSECTION (f)(2)(A) through (C): The responsibilities of the controlling contractor related to accepting the control and custody of protective covers does not relieve the individual employer or subcontractor from protecting their employees from impalement hazards in accordance with the provisions of Section 1712(c).

(g) Requirements for Hoisting and Rigging Reinforcement Assemblies.

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(1) A qualified rigger (a rigger who is also a qualified person) shall inspect the rigging prior to each shift and the handling of loads shall be in accordance with General Industry Safety Order, Section 4999.

(2) Routes for suspended loads shall be pre-planned to ensure that no employee is required to work directly below a suspended load except for:

(A) Employees engaged in the placing or initial connection of the reinforcement assemblies; and

(B) Employees necessary for the hooking or unhooking of the load.

(3) When working under suspended loads, the following criteria shall be met:

(A) Materials being hoisted shall be rigged to prevent unintentional displacement;

(B) Hooks with self-closing safety latches or their equivalent shall be used to prevent components from slipping out of the hook.

(4) All loads shall be rigged by a qualified rigger.

(5) All lifting devices below the hook such as spreader bars used for hoisting pre-assembled cages, walls, columns, beams and other structures shall be designed, load rated and fabricated under the direction of a California registered professional engineer.

(6) The controlling contractor shall prohibit all activities under or in the hazard area of hoisting operations including unloading and staging areas for reinforcement assemblies.

(h) Post-Tensioning Operations. The controlling contractor shall:

(1) Provide written documentation to the company performing the stressing operation that the minimum specified initial concrete compressive strength has been achieved prior to commencement of stressing operations.

(2) Ensure no employees (except those essential to the post-tensioning operations) shall be permitted to be behind the jack or the fixed end anchorage during tensioning operations. No employees shall be permitted above or alongside the full length of the tendons during tensioning operations.

(3) Ensure signs and barricades are erected to limit access into the stressing area only to personnel engaged in stressing or de-tensioning operations.

(4) Prohibit other construction trades from working in the barricaded area during stressing operations.

(5) Ensure there is an adequate safe work platform of a minimum of three feet measured from the end of the floor slab to the platform toeboard, such as an extension of the formwork, for stressing tendons, cutting tendon tails, and grouting where tensioning operations are above grade.

EXCEPTION to subsection (h)(5): Where the adjoining structure or other structural space constraint precludes the installation of exterior platforms.

(A) The work platform required in subsection (h)(5) shall include guardrails and toeboards meeting the requirements of Section 1620, and shall be kept clear of any debris or materials not related to the stressing or de-tensioning operation.

(6) Ensure stressing equipment is secured to prevent accidental displacement during operation.

(7) Ensure stressing equipment calibrations per contract specifications shall be available on site. Prior to stressing, a competent person shall verify the adequacy of the stressing equipment calibrations.

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(8) Ensure a competent person shall inspect the stressing equipment for damage or defects before stressing operations begin, and periodically during the stressing operations. The use of stressing equipment shall conform to the manufacturer's instructions and recommendations.

(9) Ensure methods shall be employed to insure that supporting forms, falsework or shoring does not fall due to cambering of the concrete during the stressing operations. Dead loads and construction loads (including those due to stressing) shall be considered in the design of the forms, falsework and shoring.

(i) Fall Protection.

Employees shall not be permitted to place or tie reinforcing steel in walls, piers, columns, etc., more than 6 feet above an adjacent surface, unless a personal fall protection system is used in accordance with Section 1670 or other method affording equivalent protection from the hazard of falls from elevated surfaces.

EXCEPTION: Reinforcing ironworkers may travel point-to-point horizontally or vertically on reinforcing steel up to 24 feet above the surface below providing there are no impalement hazards.

(j) Formwork and falsework stability shall be provided in accordance with Sections 1713 and 1717.

(k) Training Requirements. In addition to the training requirements of Section 1509, the Injury and Illness Prevention Program, employers shall ensure that each employee who performs reinforcing steel and/or post-tensioning activities has been provided training by a qualified person in the following areas for the activities in which they are engaged:

(1) The hazards associated with reinforcing steel and post-tensioning activities; and

(2) The proper procedures and equipment to perform reinforcing steel and post-tensioning activities.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Amend Section 1712 to read as follows:

§1712. Reinforcing Steel and Other Similar Projections. Requirements for Impalement Protection.

~~(e) Fall Protection.—~~

~~Employees shall not be permitted to place or tie reinforcing steel in walls, piers, columns, etc., more than 6 feet above an adjacent surface, unless a personal fall protection system is used in accordance with Section 1670 or other method affording equivalent protection from the hazard of falls from elevated surfaces.—~~

~~Exception: Point to point horizontal or vertical travel on reinforcing steel up to 24 feet above the surface below providing there are no impalement hazards.—~~

~~(f) Securing Reinforcing Steel.—~~

~~(1) Reinforcing steel for walls, piers, columns, and similar vertical structures shall be guyed and supported to prevent collapse.—~~

~~(A) Guys, supports, and braces shall be installed and removed as directed by a qualified person.—~~

~~(2) Wire mesh rolls shall be secured to prevent dangerous recoiling action.—~~

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Amend Section 1713 to read as follows:

§1713. ~~Framing~~ Framed Panels and Concrete Forms.

(a) Framed panels for structures shall be securely anchored, guyed, or braced to prevent them from falling.

(b) Form panels for concrete structures shall be securely anchored, guyed, or braced to prevent them from falling or collapsing.

(1) Panels and forms exceeding 500 pounds shall have lifting attachments with a safety factor of 4.

(2) Nailed lifting attachments shall not be used.

(c) Reinforcing steel shall not be used as a guy or brace to support framed panels or concrete forms from falling. ~~attachments.~~

(d) The application of form release oil or oil to horizontal formwork shall not be done until the carpentry work on the form has been completed.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Amend Section 1717 to read as follows:

§1717. Falsework and Vertical Shoring.

(a) Design Loads.

(1) Formwork and falsework or shoring for the support of concrete or other materials shall be designed, erected, supported, braced and maintained so as to assure its ability to safely withstand all intended loads during erection, construction, usage and removal.

(c) Inspection.

(1) After construction of the falsework or vertical shoring system enumerated in section 1717(b)(1) and prior to placement of concrete, a civil engineer, currently registered in California, or authorized representative, shall inspect the falsework or vertical shoring system for conformity with the working drawings. The person performing the inspection shall certify in writing that the falsework or vertical shoring system substantially conforms to the working drawings and that the material and workmanship are satisfactory.

(e) Removal.

(1) Formwork and shores (except those used for slabs on grade and slip forms) shall not be removed until the employer determines that the concrete has gained sufficient strength to support its weight and superimposed loads. Such determination shall be based on compliance with the stipulated conditions for removal of forms and shores indicated in the plans and specifications.

(2) Reshoring shall not be removed until the concrete being supported has attained the strength to support its weight and all loads placed upon it.

(f) The controlling contractor shall prohibit employee access to the bridge decks during the jacking and grading operations.

NOTE For regulations relating to permits for falsework, see Section 1503.

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

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Delete Section 1721:

~~§1721. Post Tensioning Operations.~~

~~(a) No employee (except those essential to the post tensioning operations) shall be permitted to be behind the jack during tensioning operations.~~

~~(b) Signs and barriers shall be erected to limit employee access to the post tensioning area during tensioning operations.~~

NOTE: Authority cited: Section 142.3, Labor Code. Reference: Section 142.3, Labor Code.

SUMMARY AND RESPONSE TO COMMENTS

Summary and Response to Oral and Written Comments:

I. Written Comments

Ms. Amber Rose, CIH, Area Director, United State Department of Labor, Occupational Safety and Health Administration, Region IX, by letter dated November 14, 2016.

Comment:

Ms. Rose stated the proposal appears to be commensurate with federal standards. Ms. Rose also stated that federal OSHA would like the state to ensure the changes to the trigger height being considered [a reference to a future proposal to amend Title 8 residential construction fall protection standards] will not be affected or misrepresented and a suggestion to address “overturning” in proposed Section 1711(e)(1) to render it comparable to federal standard 1926.703(d)(1).

Response:

The Board would like to express its assurance that the proposed rulemaking will not have any adverse effect upon the Board’s residential fall protection trigger height proposal. Each proposal is a vertical standard which has specific applicability to its respective operation. With regard to federal OSHA’s second comment regarding overturning; failing post-tensioned structures do not overturn, they collapse. The federal Section 1926.703(d)(1) refers to general requirements for formwork; the proposal is a vertical standard specific to the type of form work used in conjunction with post-tensioning tendons. There is no data in California to suggest that overturning is a risk for the operations addressed by the proposal.

The Board thanks Ms. Rose for her comments and participation in the rulemaking process.

The following commenters have expressed support for the proposal via written letters and are grouped accordingly below.

Mr. Eric M. Dean, General President, International Association of Bridge, Structural, Ornamental and Reinforcing Iron Workers (IABSORI), by email dated December 6, 2016

Mr. Daniel S. Parker, Executive Director, Department of Reinforcing, IABSORI, by email dated December 6, 2016

Mr. Don M. Savory, Business Manager, Financial Secretary Treasurer, IABSORI, Local Union No. 155, by email dated December 6, 2016

Mr. Theodore L. Neff, P.E., Executive Director, Post-Tensioning Institute, by email dated December 6, 2016

Mr. Donald A. Zampa, President, District Council of Ironworkers of the State of California and Vicinity, by email dated December 6, 2016

Mr. Fred Coddington, Executive Vice President, National Association of Reinforcing Steel Contractors, by email dated December 7, 2016

Mr. Jeff McEuen, Business Manager, Financial Secretary/Treasurer, Iron Workers Local 378, Union Office of Bridge, Structural, Ornamental and Reinforcing, by email dated December 7, 2016

Mr. Charlie Hernandez, Business Manager, Ironworkers Local 377, IABSORI, by email dated December 7, 2016
Mr. David McDonald, Ph.D., P.E., President and CEO, Concrete Reinforcing Steel Institute, by email dated December 7, 2016
Ms. Jodie Yount, President, Rebar International, by email dated December 7, 2016
Mr. Lyle Sieg, Executive Vice President of Safety, Harris Rebar, by email dated December 8, 2016
Mr. Juan (Johnny) M. Galvan, Business Manager FS/T, IABSORI, Local Union No. 229, by email dated December 8, 2016
Mr. Hart Keeble, Business Manager, FST, IABSORI, Reinforcing Ironworkers, Local No. 416, by letter dated December 5, 2016
Mr. Edward Ulshafer, Ulshafer Insurance Consulting, by email dated December 14, 2016
Mr. Jim Kegebein, Kegebein Consulting, Inc., by email dated December 14, 2016
[no name and signature provided], Executive Vice President, Harris Rebar, by email dated December 13, 2016
Mr. Karl Pineo, Financial Secretary-Treasurer, Business Manager, IABSORI, Local Union No.118 by letter dated December 5, 2016
Mr. Robbie Hunter, President, State Building and Construction Trades Council, by letter dated December 12, 2016
Mr. Greg McClelland, Executive Director, Western Steel Council, by letter dated December 14, 2016
Mr. Steven L. Rank, Executive Director of Safety and Health, Ironworker International Union, IABSORI by letter dated December 13, 2016

Comment:

The individuals listed above represent labor, management and independent subject matter experts (consultants) who have expressed their support for the proposal urging the Board to adopt the proposal.

Response:

The Board acknowledges the comments expressed by these commenters and thanks them for their support and participation in the Board's rulemaking process.

The individuals below submitted comment letters expressing support for the proposal. They consist of current and retired (former) represented (IABSORI) ironworkers. Dates are provided where given.

Mr. Charles Eckert, Local 416
Mr. Marcelo Perez, December 5, 2016
Mr. Agustin A. Obando, December 5, 2016
Mr. Michael Cardoza, December 5, 2016
Mr. Roberto Salgado, December 5, 2016
Mr. Paul Olivas, December 5, 2016
Mr. Eduardo Mendez, December 5, 2016
Mr. Albert Castillo, December 5, 2016

Mr. Issac Palacios, December 5, 2016
Mr. Benjamin Bonilla, December 5, 2016
Mr. Michael Duran, December 5, 2016
Mr. Ernesto Alcala, December 5, 2016
Ms. Guadalupe Fomab
Mr. Francesco Martinez
Mr. Robert Alexander, IABSORI, Local 416,

Mr. Juvenal Ramirez
Mr. Eduardo Felipe
Mr. Edgar Felix
Mr. Miguel Felix
Mr. David Cuevas
Mr. Taylor Carter
Mr. Pele Toailoa
Mr. Oscar Ramirez
Mr. Josuha Pineda
Mr./Ms. Caelan Hiegel
Mr. Miguel Huizar
Mr. Jeff Peterson
Mr. Colby Paxon
Mr. Arturo Mata
Mr. Jose Cruz Peralta
Mr. Jose Cuevas
Mr. Nathan Hilburn
Mr. Manuel Felix
Mr. Alberto Villalobos
Mr. Frankie Jorquez
Ms. Rhonda Rodriguez
Mr. Albert Rosales
Mr. Gerardo Perez
Mr. Jonathan Mercado
Mr. Pedro Yanez
Mr. Santiago Valadez
Mr. Michael Meza
Mr. Johnathan Vasquez
Mr. Dylan Amos
Mr. Aaron Hulse
Mr. Jacob Palomino
Mr. Alex Shilling
Mr. Bryce Bubion
Mr. Ted Alexander
Mr. Ernesto Necochea
Mr. Travis Knott
Mr. Arnalfo Duenas
Mr. Jaime Serna
Mr. Luis Garcia
Mr. Miguel Bravo
Mr. Pedro Zelaya
Mr. Neal Vanert
Mr. Chris Brencato
Mr. Mark Baldwin
Mr. Uriel Lopez

Mr. James Ervin
Mr. Carlos Fernandez
Mr. Ron Gordon
Mr. Gregg Granillo
Mr. Jason O'Lull
Mr. Juan Mendoza
Mr. Aron Rodriguez
Mr. Kevin Campbell
Mr. Rory Brill
Mr. Kyle Brill
Mr. Jesus Valdez
Mr. Diego Gonzalez
Mr. Isamer Peralta
Mr. Marcelo Peralta
Mr. John Crouch
Mr. Octavio Silva
Mr. Rapael Ramirez
Mr. Oscar Gavino
Mr. William Lopez
Mr. Mario Ramirez
Mr. Javier Correa
Mr. Devonte Holloway
Mr. Edward Bess
Mr. Jonathan Ruelas
Mr. James Faulkner Jr.
Mr. Michael Faulkner
Mr. Steve Gomez
Mr. James Shipley
Mr. Richard Santiago
Mr. Jorge Salazar
Mr. Rene Guerra
Mr. Felix Villasenor
Mr. Wesley Williams
Mr. Heath Perrault
Mr. Robert Berumen
Mr. Octavio Mozales
Mr. Junior Medina
Mr. Albert Castillo
Mr. Carlos Tafoya
Mr. Brian Suttle
Mr. Shawn Winterbourne
Mr. Danny Harmon
Mr. Frank Chavez
Mr. Ricardo Navarro
Mr. Zack Palfy

Mr. Reynaldo Colin
Mr. Luis Ocampo
Mr. Mario Ariza Jr.
Mr. Carlos Rios
Mr. Raymond Gray
Mr. Adrian Mendoza
Mr. Russell Easterling
Mr. Albert Garcia Jr.
Mr. Willie Alexander
Mr. Freeman Moore
Mr. Mike Rodriguez
Mr. Lawrence Smith
Mr. Chris Marin
Mr. Fabian Morales
Mr. Mike Allen
Mr. Juan Perez
Mr. Ryan Fisher
Mr. Richard Byrd
Mr. Michael Heredia
Mr. Eduardo Mendez
Mr. Roberto Salgado
Mr. Brad Huth
Mr. Uriel Arments
Mr. Rudolfo Palomera
Mr. Patrick Sanchez
Mr. Jose Espinoza
Mr. Hart Keeble
Mr. Fernando Gutierrez
Mr. Javier Valencia
Mr. Saul Ponce
Mr. Hector Barragan
Mr. Benjamin Lopez Jr.
Mr. Octavio Serrato
Ms. Noel Marin
Mr. Ronnie A. [no full last name given]
Mr. Roger Salas
Mr. Mark Estrada
Mr. James Cisneros
Mr. Larry Ramirez
Mr. James Drake
Mr. Rene Sanchez
Mr. Osiel Garcia
Mr. Marc Keller
Mr. John Montalvo
Mr. Dale Lupines

Mr. Luis Diaz
Mr. Rogelio Ruiz
Mr. Daniel Medrano
Mr. Esteban Bustamante
Mr. David Eggert
Mr. Agustin Obando
Mr. Hector Uribe
Mr. Alexander Garcia
Mr. Hector Miramontes
Mr. Francisco Morelda
Mr. Mario Martinez

Comment:

The individuals listed above (ironworkers) expressed their appreciation for passing the reinforcing rebar and post-tensioning standards and added that their loved ones thank the Board for helping to provide a safe work environment.

Response:

The Board acknowledges the support for the proposal by the ironworkers. The public hearing phase of the proposal is complete. This proposal will be scheduled for adoption at a future business meeting of the Board. The Board wishes to express its thanks to the ironworkers for their support and participation in the Board's rulemaking process.

Mr. Michael Walton, Secretary, Construction Employers' Association (CEA), by letter dated December 9, 2016.

Comment No. 1:

The CEA states that despite a precise accounting of the number of man hours California workers spent performing reinforcing steel (rebar) activities in California, the Initial Statement of Reasons is devoid of any accident, injury or fatality statistics to corroborate the necessity for the proposal. In addition, the CEA recognizes that much of the proposal derives from National Consensus Standard (ANSI/ASSE A10.9-2013); it is unclear what the specific hazards are with regard to post-tensioning and rebar operations and how each proposed section will mitigate those hazards. In addition, the benefits of the proposal appear speculative in nature.

Response:

A letter from Mr. Steve Rank, Director of Safety and Health, IABSORI dated August 28, 2016, listed 14 disabling injuries and fatalities. They included but are not limited to situations where employees involved in post-tensioning were struck in the chest by a post-tensioning jack and died, a fatality due to rebar column collapse and improper guying, a fatality resulting from a vertical concrete form collapse and a disabling injury related to material handling due to poor site conditions (insufficient space). Additionally, the letter states that reinforcing steel post-tensioning claims and related worker compensation costs, general liability claim costs, medical treatment, rehabilitation and other related costs could range from \$20-\$40 million per year.

The Board does not accept CEA's comment indicating that the specific necessity for each proposed provision is not demonstrated. It is the Board's view that the ISOR provides adequate basis for necessity. The ANSI/ASSE A10.9-2013 standard developed by labor and management identified the need for the standard's provisions based on their evaluation of the state of worker safety in the rebar and post-tensioning industry. This was the same conclusion reached by the advisory committee convened by Board staff.

Consequently, the Board believes no modification of the proposal based on CEA's Comment No. 1 is necessary.

Comment No. 2:

The CEA stated that while there are elements of the proposed amendments that are substantially duplicative of other Construction Safety Order (CSO) requirements, it supports the concept of a vertical standard to address rebar and post-tensioning safety. However the CEA indicated that such a proposal should not be overly burdensome or prescriptive to the controlling contractor (CC) and his/her responsibilities and be consistent with other CSO standards. Pursuant to Section 336.11, in the event of a citation, the controlling contractor does not have an affirmative defense but subcontractors do.

Response:

The Board acknowledges the support of the CEA for a vertical rebar and post-tensioning standard. The Board does not believe the consensus proposal is overly prescriptive or burdensome upon the CC. The proposal follows the assignment of duties and responsibilities which the national consensus ANSI/ASSE A10.9-2-13 committee reasoned was required to assure the safety of all jobsite employees. That committee concluded that, from an administrative point of view, to assure the safety of all jobsite employees the CC who has the overall authority over site operations should have the responsibility for ensuring the safety of those employees. That responsibility cannot be delegated to subcontractors such as reinforcing steel contractors (RC) who do not have that authority. This is the same operating philosophy expressed in Title 8, Steel Erection Standards commencing with CSO Section 1710.

The CEA enforcement oriented argument regarding Section 336.11 and the employer's affirmative action defense is an enforcement issue which the Board is precluded from responding to as it is the responsibility of the Division to apply, enforce and interpret Title 8 standards and is not relevant to any particular proposed amendment.

Comment No. 3:

The CEA stated both the CC and the RC appreciate the importance of having adequate space to ensure the overall efficiency of the operation, however in tight urban environments it is not always possible to provide space as required by Section 1711(c)(2). The CEA recommends subsection (c)(2) be modified to state that in dense metropolitan areas where it is infeasible due to space constraints, to provide a work area that is drained and graded, the CC shall be exempt from the space requirement.

Response:

The Board accepts this comment from the CEA and will modify the proposed language in subsection (c)(2). The Board recognizes that the space set aside for RC and their employees will make the operation safer and the project more efficient which will prevent accidents and help contain project costs.

Comment No. 4:

The CEA notes that proposed Section 1711(d) requires the CC to provide written notice to the RC that formwork/falsework has been inspected by a competent person. The CEA states this proposed requirement appears to duplicate CSO Section 1717(c)(1) and (2) of the falsework and vertical shoring regulation. The inspection is typically performed up to two days prior to concrete placement. The CEA believes it is unnecessary for the formwork/falsework contractor to re-inspect during and

immediately after installation of rebar and the placement of concrete since the formwork/falsework contractor would have had to provide the RC with notice before beginning installation.

The CEA suggests language be added that would require the RC to submit a laydown plan with all the expected load weights and locations to the CC prior to the materials being placed on the falsework deck.

Response:

The Board notes the RC is not trained to calculate the live load based on the weights of the materials that are to be placed on the falsework deck. It is the responsibility of the formwork/falsework contractor to develop and provide the load capacity of the falsework deck as they are in the best position technically to make that calculation. The formwork/falsework contractor typically calculates the load bearing capacity of the deck based on the information contained in the laydown plan. The RC already develops and provides laydown plans to the CC which includes information that describes the timing of deliveries, handling of materials and material characteristics which may include weights of materials that will be placed on the deck. Therefore, it appears that what the CEA is requiring of the RC is already a standard operational practice by the RC.

Consequently, no modification to the proposal as suggested by CEA is necessary.

Comment No. 5:

The CEA suggested adding language to require the RC to have a competent person on site to ensure that site conditions are stable and secure, meaning the RC should have the responsibility to check the sloping, benching and shoring of all jobsite excavations. The CEA brought forward again Section 336.10(a) of the Division's regulations as justification for the necessity of this modification by stating that it would be inconsistent with Section 336.10(a) for the RC not to have the responsibility to ensure the stability of excavations being the exposing employer in terms of the multi-employer worksite requirements.

Response:

The Board notes the RC has nothing to do with the sloping and benching of excavations and shoring. They do not possess the training and experience to determine whether an excavation has been dug and shored in a manner that will ensure its stability. Therefore, the Board is of the opinion that this suggestion by CEA is not reasonable. Title 8 regulates excavations in Article 6 of the CSO which contains extensive and detailed standards specifically relating to sloping and benching. Those standards already require all sloping and benching to be performed in accordance with accepted engineering practices as required by a registered professional engineer. The recommended CEA language is inconsistent with what is required by the ANSI/ASSE A10.9-2013 standard for this issue which states in chapter 8.3:

“8.3.3 The project constructor (i.e. general contractor or CC) shall ensure that the erected shoring equipment is inspected by a competent person prior to, during and immediately after the installation of reinforcing bars and placement of concrete.”

The Board believes no modification to the proposal is necessary.

Comment No. 6:

The CEA stated the RC should be required to ensure the assemblies and supporting structure erected for reinforcing steel and post-tensioning operations will not fail catastrophically. In addition, the CEA suggests the RC be required to perform an analysis to determine if the vertical reinforcing assemblies for walls, piers and columns are capable of sustaining wind and construction loads, free standing, and if they are not capable they should design the guying or bracing system to be used. This analysis and any required bracing or support should be performed by a licensed engineer who shall be available at the jobsite.

Response:

The Board notes that while proposed Section 1711(e) is silent with regard to who is to perform the design analysis for systems used to guy, brace and support vertical and horizontal columns, walls and other reinforcing assemblies, the ANSI A10.9-2013 is clear as stated in Chapter 10.3.3.7, that this is the function of a competent person retained by the project constructor or CC. The Board also notes that there is no necessity for the suggested CEA modification to Section 1711(e). All through the ANSI A10.9 standard the project constructor or CC is given the responsibility for ensuring that many of the provisions including this one are carried out. The Board finds no reason to deviate from that path and believes no modification to Section 1711(e) is necessary.

Comment No. 7:

The CEA stated the proposed requirement in Section 1711(e)(5) to provide the RC with exclusive access to the erection level for setting any and all reinforcing elements would have the effect of “piece-mealing” the work. It is CEA’s opinion that this would create an unsafe disruption in the cycle of activities for any concrete structure which depends upon sequential curing of the various elements. Any interruption would result in a change in the engineering cycle and approach to the project which is based on a predetermined amount of time for each cycle. Repetitive cycles so common in this type of construction would be adversely impacted and add additional time to complete the construction activities for each floor. Delays add up to increased owner costs and such costs are not reflected in the ISOR’s cost analysis.

The CEA suggests a modification to the proposal to require the RC to flag specific areas of the erection level for their work activity and serve as a warning to the other trades of the hoisted vertical elements and that the guying and bracing shall be in place before the release of the reinforcing assembly from the hoist rigging.

Response:

The Board agrees with the concerns expressed, accepts this comment by the CEA and has modified the proposal using the CEA wording proposed in their December 9, 2016, letter to the Board.

Comment No. 8:

The CEA stated Section 1711(f) inappropriately shifts critical responsibilities for impalement protection from the reinforcing steel contractor to the controlling employer. The proposal should indicate that the contractor who creates impalement hazards should be responsible for making sure the covers remain in place for the benefit of all the trades that may be exposed. The CEA proposed language that would shift that responsibility away from the CC to the RC.

Response:

The Board believes the CC is the ultimate jobsite authority for ensuring the safety of all jobsite employees and therefore should have the responsibility as indicated by the proposed language to make sure rebar caps and covers remain in place as long as they are needed to protect all jobsite workers. Chapter 10.3.4.3.1 of the ANSI A10.9-2013 standard clearly places the responsibility of ensuring that impalement protection is left in place at the direction of the CC. Again the CC has ultimate jobsite authority for all employees/trades that enter and work on the jobsite and if any trade were to remove a protective cover they would have to answer to the CC not the RC who does not have overall jobsite authority. The Board believes the CC must take responsibility for the covers and ensure they are not tampered with or removed after the RC has left the jobsite.

Comment No. 9:

The CEA believes the responsibility for ensuring that no employees are in the prohibited area under hoisting operations should not be exclusive to the CC and suggests striking the term “controlling contractor” from the language in subsection (g)(6). This would make Section 1711(g)(6) consistent with Section 1710(d) of the steel erection standard.

Response:

The Board notes that the proposed requirement in subsection (g)(6) is consistent with ANSI A10.9-2013; specifically Chapter 10.3.5.5 places the responsibility called forth above with the CC. The Board is of the opinion the proposal is consistent with Section 1710(d) to the extent that CC’s involved in steel erection have the responsibility of ensuring that no employee is present under the rigged and hoisted loads. This is accomplished by pre planning routes for suspended loads to ensure that no employee is working below a suspended load except under specified conditions. The true consistency of the issue is that Section 1711(g)(6) is specific to post-tensioning and rebar operations and puts industry practice in steel erection into Section 1711(g)(6) for clarity. The Board believes no modification of the proposal for this issue is necessary.

Comment No. 10:

The CEA supports the proposed language in Section 1711(h)(1) as it is vital that information pertaining to the achieved compressive strength of the post-tensioned elements be communicated in a clear and unambiguous fashion.

Response:

The Board agrees and acknowledges the CEA’s support for the language in Section 1711(h)(1).

Comment No. 11:

With regard to proposed Section 1711(h)(3), which requires the erection of barricades and signs to limit access to the stressing areas are erected and in place, the CEA believes proposed subsection (h)(4) requiring the CC to bar other trades from working in the barricaded area during stressing operations is unnecessary. If the barricades have been sufficiently set-up by the reinforcing steel contractor, then subsection (h)(4) should be struck. The reinforcing steel contractor has certain responsibilities under the multi-employer regulation.

Response:

The Board does not agree with CEA. It is one thing to require barricades and signs be erected to prevent and warn employees to stay out of stressing areas, and quite another to enforce or otherwise make sure that no one enters areas that are off limits. Again, the ANSI standard referenced earlier and the Board staff advisory committee agreed the responsibility to ensure there are no unauthorized entrances by employees across barriers and in spite of signs is the responsibility of the CC who has the authority to enforce this requirement; the RC does not. The Board believes no modification of the proposal is necessary.

Comment No. 12:

With regard to the requirement in Section 1711(h)(5), the CEA stated that where space is available, most projects already incorporate a platform for stressing tendons, cutting tendon tails and grouting. The CEA stated that neither the Initial Statement of Reasons nor the Informative Digest addressed why 36 inches for the platform extension length was selected. The CEA proposed language that would stipulate the employer assure that an adequate work platform is provided, such as an extension of the formwork for performing post-tensioning/rebar related work.

Additionally, the CEA cited an example of a jobsite condition where a 3 foot platform would not be possible due to space constraints created by the unusual architecture of an urban parking garage. For such cases the CEA proposed exception language to their revised subsection (h)(5) that would state that where the design, structure, or space constraint precludes the installation of exterior platforms the employer does not have to provide the space specified in the revised subsection (h)(5).

Response:

The Board notes that the proposed requirement in subsection (h)(5) is based on language from ANSI/ASSE A10.9-2013, Chapter 10.3.6.6. That standard specifies a minimum 3 foot safe work platform extension be provided by the CC which can include extension of the formwork. The Board believes the CEA suggested language is performance in nature, a bit vague and would not necessarily result in providing adequate platforms. The CEA proposed revision creates the possibility that the CC would not pre-plan for platform extensions and utilize elevating work platforms, such as a scissor lifts or scaffolding, to provide a safe work area. This type of equipment is both unstable and cost prohibitive and there would still be issues with adequate safe space to erect a scaffold and move or articulate the equipment safely. The Board also recognizes that CCs have the ability to perform some early-on planning and design to ensure to the extent possible, the platform extensions can be provided.

It is the Board's view the CEA revised subsection (h)(5) is not as effective as the proposed language and national consensus language. The Board wishes to clarify that Board staff's proposed exception to subsection (h)(5) would allow the employer to forgo providing the 3 foot extension (an additional 36 inches) in situations where space and/or adjoining structures preclude its installation. Therefore, the CEA revised exception language is unnecessary.

Comment No. 13:

The CEA suggested adding language to subsection (h)(5) to require the RC, while stressing beams during the construction of a parking garage, to provide access to the cables below the elevated slabs of the Cunningham beams by mobile equipment such as aerial boom lifts, scissor lifts or scaffolding.

Response:

The Board finds this suggested revision by the CEA to be unacceptable. The use of scissor lifts, scaffolding and aerial device platforms do not provide the same level of safety provided by platform extensions. Problems could arise with cost, stability and sufficient space for aerial devices and aerial booms to safely articulate. The CC has the responsibility to design and plan for the needed safe platform space required by proposed subsection (h)(5).

Comment No. 14:

The CEA stated their employers are safety conscious, taking their CC responsibilities seriously. However they suggest Sections 1711(h)(6)-(8) be deleted from the proposal as they place significant responsibilities upon the CC that should be placed on the contractor doing the work. The reinforcing steel contractor is hired for their unique skills and expertise. It is confounding that they would need this level of oversight by the CC.

Response:

The Board's believes that as modified these provisions are critical and necessary to effectively protect post-tensioning and rebar workers. It is also the Board's belief that from an administrative point of view, the CC has authority over other trades which the reinforcing steel contractor does not. Given that authority, the safety responsibility for all jobsite personnel belongs with the CC.

This was borne out repeatedly in both Board staff advisory committee deliberations and those conducted at the national level by the American National Standards Institute and the American Society of Safety Engineers. The provisions that the CEA suggests be deleted and which are taken essentially verbatim as Section 1711(h)(6-8) are taken from Chapter 10.3.5 of the ANSI/ASSE A10.9-2013 standard. The Board believes there are no reasonable alternatives to this proposal that will ensure the safety of jobsite post-tensioning and rebar workers as effectively as this national consensus based proposal. Consequently the Board believes that the proposal should not be modified as suggested by the CEA.

Comment No. 15:

The CEA stated the proposed language removes the responsibility and oversight for ensuring the safety of their employees from the reinforcing steel contractor. The CEA also stated that while they are in favor of a safe workplace, the proposal is largely without necessity and it does not accurately depict the economic impact of the proposal. The CEA requests the Board to consider alternatives to the proposal.

Response:

The Board disagrees with the CEA assertion that the economic analysis is inaccurate. The best available data was subjected to economic/fiscal impact analysis. During the advisory committee deliberations, the committee discussed and considered the most appropriate language for this standard. No alternative was presented that would either 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 or would be more cost-effective to affected private persons and equally effective in implementing the statutory policy or other provision of law than the proposal described.

The Board would like to thank the CEA for its comments and participation in the Board's rulemaking process.

II. Oral Comments

Oral comments received at the December 15, 2016, Public Hearing in Sacramento, California.

Mr. Hart Keeble, Reinforcing Ironworkers, Local 416

Comment:

Mr. Keeble expressed support for the proposal stating that it will save lives by giving reinforcing steel contractors the tools they need to keep their workers safe.

Response:

The Board acknowledges Mr. Keeble's support for the proposal and thanks him for his participation in the Board's rulemaking process.

Mr. Greg McClelland, Western Steel Council

Comment:

Mr. McClelland stated the proposal will not nullify the reinforcing steel contractor's responsibility to protect his/her workers. The controlling contractor will assure that the necessary design requirements have been installed safely. He also indicated that much of what the proposal requires is already required by Title 8 steel erection standards. He stated that heavy steel is capable of inflicting serious injury to employees and that the 36 inch deck extension is not an arbitrary number. A great deal of consideration was given to the deck extension and providing employees with a safe place to stand during the tensioning process.

Response:

The Board acknowledges Mr. McClelland's support for the proposal and thanks him for his participation in the Board's rulemaking process.

Mr. Carlos Crisonino, Gerdau and Mr. Robert Carpenter, Commercial Metals Company Rebar

Comment:

Mr. Crisonino and Mr. Carpenter both expressed support for the proposal stating that it goes beyond the existing Title 8 requirements for this issue which do little to assure the controlling contractor will implement many of the best practices aimed at protecting ironworkers. The proposal will require written confirmation that decks are safe for workers, improve communication between the controlling contractor and subcontractors, and that hazards such as providing rebar covers are controlled even when reinforcing steel contractors are not on site.

Response:

The Board acknowledges Mr. Crisonino and Carpenter's support for the proposal and thanks them for their participation in the Board's rulemaking process.

Mr. Bill Benham, Bill Benham Consulting

Comment:

Mr. Benham noted a great deal of communication takes place between all trades on a jobsite every day; they coordinate, plan and execute work often at the same time. As far as barricading is concerned, whoever creates a hazard should mitigate it or at least provide a barrier to prevent others from coming in contact with the hazard or hazardous area. In the case of stressing operations, the general contractor must work closely with the reinforcing steel contractor to determine which part of the structure is being stressed and place signs and take measures to keep people out of those areas.

Response:

The Board recognizes the need for communication between CC's and reinforcing steel contractors and as noted above in the comments by Mr. Crisonino and Mr. Carpenter, very often there are hazards created by persons other than the reinforcing steel contractor. In this case the site overseer, CC, must ensure that regardless of who left an exposed hazard, the hazard is mitigated. This was the national consensus standard view by the ANSI A10.9 committee made up of CC's and reinforcing steel contractors. The accepted best practice is to have the CC responsible for things like barricades and signs. The Board agrees with this recommendation by the ANSI A10.9 committee.

Consequently, the Board believes no modification to the proposal for this issue is warranted. The Board thanks Mr. Benham for his comment and participation in the Board's rulemaking process.

Mr. Steve Rank, Ironworkers International Union

Comment:

Mr. Rank stated this proposal addresses post-tensioning and rebar hazards that have been prevalent in the industry for many years. He notes that the advisory committee was well attended and there was no widespread opposition at that time. Mr. Rank made a number of observations relating to steel erection that have comparable standards proposed for post-tensioning operations such as but not limited to: a reduction in accidents relating to site conditions, written notifications, stabilizing and guying off columns by a competent person and impalement protection. Mr. Rank concluded by saying that the proposed training requirement will ensure that the affected parties involved in rebar and post-tensioning operations will know and understand their responsibilities.

Response:

The Board thanks Mr. Rank for his support of the proposal and participation in the Board's rulemaking process.

Comment:

The Following individuals also commented in support of the proposal:

- Kurt Johnson, Harris Rebar
- David Jones, Associated General Contractors of California (AGC)
- Robert Alexander, Ironworkers Local 416, Los Angeles
- Dan Fonseca, Pacific Steel Group
- Jason Gallia, Iron Workers Union Local 378

- John Hernandez, Iron Workers Local 155
- Eddie Reyes, Iron Workers Local 377, San Francisco
- Wade Williamson, Iron Workers Local 229, San Diego
- Kevin Bland, Representing the California Framing Contractors Association and the Residential Contractors Association
- Don Zampa, District Council of Iron Workers of the State of California and Vicinity
- Jeremy Smith, State Building Construction Trades Council

Response:

The Board acknowledges the support for the proposal expressed by the individuals listed above and thanks them for their participation in the Board's rulemaking process.

Ms. Cindy Sato, Construction Employers Association (CEA)

Comment:

Ms. Sato stated that the CEA is not opposed to the specific reinforcing steel and post-tensioning proposal, but believes the regulations should be consistent with other construction safety orders by being less burdensome to controlling contractors. She made reference to figures quoted in the economic impact analysis relating to the number of man hours spent performing reinforcing steel operations in California. However, no injury accident statistics or facts related to those man-hours spent performing rebar and post-tensioning operations were included in the ISOR or the Informative Digest. Given the statement that the employer will likely see a reduction in operating costs vis-a-vis the reduction in injuries and accidents, that data should be provided.

Response:

See the Board's response to Comment No. 1 by Mr. Michael Walton, dated December 9, 2016.

The Board acknowledges CEA support of the proposal and wishes to emphasize that the advisory committee convened by Board staff reached the same position with regard to the delegation of responsibilities to the CC. The proposal is based on the recommendation of the ANSI A10.9 committee. Both committees recognized that giving the CC's overarching authority on the job ensured the safety of all participants in the rebar and post-tensioning operations and the other trades.

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

Mr. Donald Anderson, CEA, Safety Steering Committee

Comment No. 1:

Mr. Anderson suggested that formwork inspections should continue under Section 1717 and suggested adding a requirement stating the rebar contractor follow the engineer's laydown plan to control the heavy weight of the concentrated rebar or rolls of post-tensioning cables on the deck. In addition, Mr. Anderson suggested deleting Section 1711(d)(1) and replacing it with a requirement that the rebar contractor submit a staff engineered laydown plan to the CC.

Response:

It is the Board's understating that reinforcing steel contractors already provide the engineer's laydown plan to ensure that live loads do not exceed the load bearing capacity of the decks which could result in catastrophic collapse. Therefore, the Board believes an additional requirement is not necessary. The Board does not agree to delete the requirement proposed in Section 1711(d)(1), which represents the consensus recommendation of both the advisory committee and the ANSI A10.9-2013 committee. The Board believes the CC is the jobsite entity to acquire verification from the form/falsework contractor that the form/falsework is safe to work on/around.

Comment No. 2:

Mr. Anderson stated that with regard to the proposed written notification requirement in Section 1711(d)(2), it is unnecessary as it duplicates existing requirements that require bracing of concrete forms to prevent collapse. He stated that the current standard is sufficient and should not be modified.

Response:

The Board does not accept Mr. Anderson's suggestion that the proposed notification requirement be deleted as duplicative, as the Board finds no duplication. The proposal requires the CC to provide written notification to the reinforcing steel contractor that the decks and formwork are structurally sound to work from. This is a responsibility that is similar to what is required by the steel erection standard and has been captured here for reinforcing steel and post-tensioning work, an entirely different process, and must be so stated in the proposal to ensure compliance.

Comment No. 3:

Mr. Anderson stated that proposed Section 1711(d)(3), the requirement for written notification by the CC that an excavation has been inspected, is unnecessary because it is addressed by Section 3336.10 under the multi-employer law and requires the excavating contractor to provide such verification. He demonstrated awareness that excavators are the controlling contractor and must ensure per other applicable Title 8 requirements the excavations they create are inspected prior to their employees entering them. Excavation standards require a competent person present while work proceeds to ensure that employees are not subjected to injury/fatality should the soil become unstable. This requirement should be retained.

Response:

The Board believes that Mr. Anderson is citing Section 336.11 of the regulations of the Division which pertains to determination of applicability of defenses; an enforcement related regulation enforced by the Division. Consequently, the Board does not agree with the comparison made by Mr. Anderson between this Division enforcement standard and the proposed Section 1711(d)(3) requirement intended to ensure that reinforcing steel employees are not exposed to excavation hazards through notification by the CC to the reinforcing steel contractor that the required excavation inspections have taken place and the excavation is safe. Only the CC has the authority to ensure the excavation subcontractor will provide this critical information to the RC. Therefore the Board believes no modification of the proposal is necessary.

Comment No. 4:

Mr. Anderson suggested adding language in proposed Section 1711(e)(2) to require systems for guying, bracing and supporting the vertical rebar structures to be designed by a California registered

engineer and be kept on site at all times. This is necessary to avert the serious collapse risks posed by reinforcing steel structures that are getting longer and taller every day. Some of these structures are supported internally, others externally, and it's not always clear to the employee which one is safe to climb. He also indicated that the CC relies on the RC to ensure that these assemblies are structurally sound and well supported.

Response:

See the Board's response to written Comment No. 6, submitted by Mr. Michael Walton, on December 9, 2016. The Board notes that it was the advisory committee's consensus recommendation to require such systems to be designed by a qualified person and removed and installed by a competent person. Therefore the Board believes no modification of the proposal is necessary.

Comment No. 5:

Mr. Anderson stated that Section 1711(e)(5) holds the CC accountable for prohibiting construction in work areas below or near vertical rebar assemblies being erected. He stated this responsibility should belong to the RC, in fact Section 5002 of the GISO prohibits working under suspended loads. He suggested that the RC be responsible for demarcating hazard areas under these structures.

Response:

The Board accepts this comment by Mr. Anderson to the extent that the Board will modify the proposal to require the reinforcing steel contractor to flag specific areas of the erection level for their work activity and to ensure that all guying and bracing be in place before the release of the reinforcing assembly from hoist rigging. However, all trade employers on site are responsible for their employees and ensuring those employees comply with standards such as Section 5002. This does not mean the RC can be expected to make other trade employers and their employees comply. Only the CC has the supervening authority for all site employees. Therefore, the Board rejects the proposal to have the RC prohibit other trades from entering the site and does not believe the proposal should be modified as such.

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

Mr. Robert Ortiz, Nibbi Brothers and Associates

Comment:

Mr. Nibbi is concerned about Section 1711(h)(5) and the requirement for a 3 foot work platform. He stated that workers may not have room to go that far due to structures, property lines, power lines, and other obstacles and other times 3 foot may not be adequate. He also mentioned that he would like to see language that does not limit it to the formwork. He suggested perhaps the use of aerial devices and platforms as alternatives.

Response:

The Board does not accept the comment by Mr. Nibbi because proposed Section 1711(h)(5) already contains an exception which allows the employer to forgo use of the platform extension in situations where adjoining structures or other spatial constraints preclude the installation of such a platform. The use of scissor lifts and aerial devices were discussed during the advisory committee proceedings and

were deemed to be highly unstable when substituting for a platform extension subjecting the device to catastrophic failure and the employees to a risk of fall. The Board notes no reason given for Mr. Nibbi's suggestion to not limit the extension or the exception to formwork. The proposed requirement is a consensus requirement of the Board staff's advisory committee and the ANSI A10.9 committee; therefore, the Board finds no reason to modify this proposed standard.

Mr. Robert Downey, CEA

Comment:

Mr. Downey stated the proposal does not improve safety, does not establish necessity and is not supportable by virtue of accident statistics. He also speculated that it may not save employer's money. Placing responsibility on CC's will distract from safety. Excavation safety may be compromised due to the reliance upon a letter of assurance from the general contractor that the excavation is safe for employees rather than actual safety monitoring and assessment of the excavation/trench. He opined further that multi-employer responsibilities should not remove responsibilities from creating employers.

Response:

The Board does not accept the comments by Mr. Downey. There are accident reports/data provided by the District Council of Ironworkers supporting the claim that rebar and post-tensioning operations are capable of inflicting very serious injury or fatality to their workers who perform these tasks. In a letter dated August 28, 2016, the International Association of Ornamental and Reinforcing Iron Workers described 14 disabling injuries and fatalities relating to post-tensioning and related iron work along with the associated dollar costs. The letter states that while the 14 listed accidents are a small portion of the total claims, the District Council of Ironworkers projects that reinforcing steel and post-tensioning claims costs due to worker compensation benefits, general liability claims, medical treatment, first aid, vocational rehab, and increased insurance costs could range from \$20-\$40 million per year.

Therefore, the Board rejects Mr. Downey's assertions that there is no necessity for this rulemaking and that there are likely to be no savings to employers.

The Board also rejects the notion by Mr. Downey that CC's will be distracted from safety. This proposal will focus site responsibilities upon the CC, the only entity on the jobsite with the authority to ensure that overall site safety is achieved and maintained among the trades. It is the Board's view that this proposal does not abrogate, delegate or in any way reduce the individual site trade employer's responsibility for creating any hazards and controlling their own portion of the jobsite where they must conduct their operations safely according to existing Title 8 standards. Excavation contractors will continue to be required to provide competent person management of trenches and excavations to ensure they are safe.

See also the Board's response to Mr. Michael Walton's comment letter to the Board dated December 9, 2016, specifically Comment No. 14 and the Board's response to that comment.

Based upon the foregoing discussion, no modification to the proposal is necessary. The Board thanks Mr. Downey for his comment and participation in the Board's rulemaking process.

Mr. Eric Peterson, Webcor Builders, San Francisco

Comment No. 1:

Mr. Peterson notes the comprehensive nature of the proposal as it addresses a number of issues other than post-tensioning. He believes it is important for ironworkers to provide vertical stability of erected rebar and have it reviewed by a registered engineer as stated in the previous comment letter by the CEA. He also stated it would be a good idea to have a release process to ensure formwork is safe for use.

Response:

With regard to the issue of the vertical stability of rebar, see the Board's response to Comment No. 6 in Mr. Michael Walton's comment letter to the Board dated December 9, 2016. See also the Board's response to Mr. Donald Anderson, Comments Nos. 4 and 5 received at the December 15, 2016, Public Hearing. The Board also notes that proposed Section 1711(e) adequately addresses the issue of vertical stability for formwork, decks and other walking and working surfaces and that proposed Section 1711(d) requires written notification that all formwork and falsework has been inspected to meet the design requirements by a competent person which by definition includes a registered engineer. The Board sees no necessity to impose a process requirement for vertical and horizontal reinforcing steel structures formwork given what is proposed by subsections (d) and (e).

Comment No. 2:

Mr. Peterson indicated the CEA letter described language which better addresses the issue of lay down in proposed Section 1711(c)(2).

Response:

The Board notes that Section 1711(c)(2) is proposed for modification to provide an exception to the requirement that a firm, graded, drained area, readily accessible to the work with adequate space for reinforcing contractors equipment and materials be provided and maintained. The modification would allow the CC to forgo this space requirement in cases where it was deemed to be infeasible due to space constraints in dense metropolitan areas. The Board believes this language addresses Mr. Peterson's concern.

Comment No. 3:

Mr. Peterson stated Section 1711(e) pertains to proximity and requires exclusive use of areas while vertical steel is being erected which is not always practical since you can have situations where a number of trades are working efficiently together in the same location. He stated that having exclusive areas will affect how these workers interact and how the construction process is executed as well as the ownership of the projects and who constructs them.

Response:

The Board believes Mr. Peterson's third comment is somewhat cryptic. Proposed Section 1711(e) pertains to the stability requirements for vertical and horizontal columns, walls and other reinforcing assemblies. The only part of this proposed requirement that might have anything to do with proximity is subsection (e)(5) which requires the CC to prohibit site workers from being subjected to hazards posed by unsecured vertical and horizontal columns, walls and other reinforcing assemblies. The

Board speculates that Mr. Peterson might be referring to this requirement in the sense that such workers must be kept out of proximity to unsecured structures. The Board does not believe this requirement should be modified in the interest of the safety of employees who need to be protected from hazardous contact. The Board is also not aware of any issues regarding a diminishment of efficiency or ownership of the project by site workers that could be adversely affected by subsection (e)(5).

See also the Board's response to Mr. Michael Walton's Comment No. 7 as it relates to flagging and demarcation of areas on site where employees need to be aware of the presence of hoisted vertical structural elements which may require securing.

Comment No. 4:

Regarding Section 1711(f), Mr. Petersen stated that the reinforcing contractor should be responsible for mitigating the hazard that he/she creates with regard to the replacement of rebar caps for impalement protection.

Response:

The Board is aware of situations that have occurred at jobsites where the impalement protection provided by the reinforcing steel contractor is without the permission of reinforcing steel contractor, removed after he/she has left the jobsite. In such cases the reinforcing steel contractor would need to identify the guilty party and have them replace the covers they removed. However, since the reinforcing steel contractor is just one of many trades on site, he/she lacks the authority to make that happen. Therefore, the advisory committee and the ANSI A10.9 committee placed the requirement that the CC, who as stated earlier is the entity on site with authority over the site and the various trades, is the only entity that can assure the covers stay in place. The proposal does not allow the reinforcing steel contractor from abandoning his/her responsibility to provide and use covers nor any other subcontractor.

The Board believes no modification of subsection (f) is necessary.

Comment No. 5:

Mr. Peterson stated the 3 foot deck extension requirement is ideal but may not be achievable in all circumstances. He suggested allowing employers to craft an extension of varying lengths such as between 24 and 30 inches or simply use some sort of performance criteria such as enough extension room to take into account the stressing jack and tendons. He requested the Division convene an advisory committee to see if some number other than 3 feet could be agreed upon.

Response:

The Board notes that it has been the District Council of Ironworkers experience to observe no or very little safe workspace provided for their workers voluntarily by the CC which has resulted in numerous injuries and near fatalities to ironworkers. The Board is of the opinion that leaving it up to the discretion of the CC may not ensure the necessary safe workspace will be provided. It must be a specific enforceable requirement. The Board supports the consensus recommendation by the advisory committee and the national ANSI A10.9 committee to specify a 3 foot extension be provided except in cases where 3 feet is not feasible the CC can utilize a smaller platform or no platform at all under the terms of the proposed exception.

This rulemaking proposal was developed by Board staff with the assistance of a committee convened by Board staff as directed in the petition Decision for OSHSB Petition File No. 537; therefore, if any further committee work was necessary it would be convened by the Board not Division staff. The Board does not believe such action is necessary, and accepts the advisory committee's recommendation for a 3 foot platform extension with the exception statement for situations where such a platform may be infeasible.

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

Mr. Drew Shank, McClellan Construction

Comment:

Mr. Shank repeated Mr. Peterson's last comment as described above.

Response:

See the Board's response to Mr. Peterson's Comment No. 5 as indicated above. The Board thanks Mr. Shank for his participation in the Board's rulemaking process.

Mr. Karl Pineo, Iron Workers Local 118, Sacramento

Comment:

Mr. Pineo stated that he would like to see site conditions addressed by the proposal given the condition of sites in rural areas during inclement weather.

Response:

The Board notes that there are ample provisions to ensure a safe site layout in the proposal; namely proposed Section 1711(c) which requires the CC to ensure that adequate access roads are provided, a firm, properly graded and drained site is provided for staging and storing equipment and materials and adequate sloping benching and shoring of all excavations is provided in accordance with applicable Title 8 standards. Consequently, the Board believes no modification to the proposal is necessary.

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