INITIAL EXPRESS TERMS
FOR PROPOSED BUILDING STANDARDS
OF THE OFFICE OF STATEWIDE HOSPITAL PLANNING AND DEVELOPMENT
REGARDING THE 2025 CALIFORNIA BUILDING CODE,
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2, VOLUME 2
(OSHPD 0X/24)

The state agency shall draft the regulations in plain, straightforward language, avoiding technical terms as much as possible and using a coherent and easily readable style. The agency shall draft the regulation in plain English. A notation shall follow the express terms of each regulation listing the specific statutes authorizing the adoption and listing specific statutes being implemented, interpreted, or made specific (Government Code Section 11346.2(a)(1)).

If using assistive technology, please adjust your settings to recognize underline, strikeout, italic and ellipsis.

LEGEND for EXPRESS TERMS (Based on International Building Code – California Code of Regulations (CCR) Title 24 Part 2 Volume 2)

- Model Code language appears upright
- Existing California amendments appear in *italic*
- Amended model code or new California amendments appear *underlined & italic*
- Repealed model code language appears ~~upright and in strikeout~~
- Repealed California amendments appear in ~~*italic and strikeout*~~
- Ellipses (…) indicate existing text remains unchanged
- Notes for publisher appears as *text* with *blue highlight*. *Blue highlighted texts* are not code amendments and shall not be published as such.
- All existing OSHPD amendments of the 2022 California Building Code (2022 CBC), that are not amended in these express terms, are carried forward without any change.

INITIAL EXPRESS TERMS

ITEM [Insert Item #]

CHAPTER 1

DIVISION I
CALIFORNIA ADMINISTRATION

SECTION 1.1- GENERAL

1.1.1 Title. *These regulations shall be known as the California Building Code, may be cited as such, and will be referred to herein as "this code." The California Building Code is Part 2 of thirteen parts of the official compilation and publication of the adoption,*

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amendment and repeal of building regulations to the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part incorporates by adoption the ~~2021~~ 2024 International Building Code of the International Code Council with necessary California amendments.

…

SECTION 1.10 - OFFICE OF STATEWIDE ~~HEALTH~~ HOSPITAL PLANNING AND DEVELOPMENT

1.10.1 OSHPD 1 and OSHPD 1R. *Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application - *[OSHPD 1] General acute care hospital buildings. [OSHPD 1R] Nonconforming hospital SPC or freestanding buildings that have been removed from acute-care service.*

Enforcing agency - *Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD). The office shall enforce the California Energy Commission – Energy Regulations, the Division of the State Architect-Access Compliance regulations, and the regulations of the Office of the State Fire Marshal for the above stated facility types.*

1.10.1.1 Applicable administrative standards.
1. Title 24, Part 1, California Code of Regulations: Chapters 6 and 7.
2. Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as indicated in the adoption matrix for Chapter 1, Division II.

1.10.1.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provisions of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.1.

OSHPD 1 adopts the following building standards in Title 24, Part 2: Chapters 2 through 10, 12, 14, 15, 16A, 17A, 18A, 19A, 20, 21A, 22A, 23, 24, 25, 26, 30, 31, 32, 33, 35 and Appendix L.

OSHPD 1R adopts the following building standards in Title 24, Part 2: Chapters 2 through 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 30, 31, 32, 33 and 35.

1.10.1.3 Identification of amendments. *For applications listed in Section 1.10.1, amendments appear in this code preceded with the acronym [OSHPD 1], unless the entire chapter is applicable. For nonconforming hospital buildings removed from acute-care service, amendments are preceded with the acronym [OSHPD 1R].*

1.10.1.4 Reference to other chapters. *Where reference is made within the California Building Standards Code (CBSC) ~~this code~~ to sections in Chapters 16, 17, 18, 19, 21 and 22, the respective sections in Chapters 16A, 17A, 18A, 19A, 21A and 22A shall apply instead for hospital buildings under OSHPD 1.*

Authority - *Health and Safety Code Sections 127010, 127015, 1275 and 129850.*

References - *Health and Safety Code Sections 19958, 127010, 127015, 129680, 1275 and 129675 through 130070.*

1.10.2 OSHPD 2. *Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application—*Skilled nursing facility and intermediate care facility buildings.*

Enforcing agency—*Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD). The office shall also enforce the California Energy Commission – Energy Regulations, the Division of the State Architect—Access Compliance Regulations, and the regulations of the Office of the State Fire Marshal for the above-stated facility type.*

1.10.2.1 Applicable administrative standards.
1. Title 24, Part 1, California Code of Regulations: Chapter 7.
2. Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as indicated in the adoption matrix for Chapter 1, Division II.

1.10.2.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provisions of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.2.

OSHPD 2 adopts the following building standards in Title 24, Part 2: Chapters 2 through 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 30, 31, 32, 33 and 35.

1.10.2.3 Identification of amendments. *For applications listed in Section 1.10.2, amendments appear in this code preceded with the acronym [OSHPD 2].*

Authority - *Health and Safety Code Sections 127010, 127015, 1275 and 129850.*

References - *Health and Safety Code Sections 127010, 127015, 1275 and 129680.*

1.10.3 OSHPD 3. *Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application - *Licensed clinics and any freestanding building under a hospital license where outpatient clinical services are provided.*

Enforcing agency - *Local building department.*

1.10.3.1 Applicable administrative standards.
1. Title 24, Part 1, California Code of Regulations: Chapter 7.
2. Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as indicated in the adoption matrix for Chapter 1, Division II.

1.10.3.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provisions of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.3.

OSHPD 3 adopts the following building standards in Title 24, Part 2: Chapter 12.

1.10.3.3 Identification of amendments. *For applications listed in Section 1.10.3, amendments appear in this code without the acronym [OSHPD 3]. Adoptions are shown in the adoption matrix.*

Authority - *Health and Safety Code Sections 127010, 127015 and 1226.*

References - *Health and Safety Code Sections 127010, 127015, 129885 and 1226, Government Code Section 54350 and State Constitution Article 11, Section 7.*

1.10.4 OSHPD 4. *Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application - *Correctional treatment centers.*

Enforcing agency - *Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD). The office shall also enforce the California Energy Commission – Energy Regulations, the Division of the State Architect—Access Compliance regulations and the regulations of the Office of the State Fire Marshal for the above-stated facility types.*

1.10.4.1 Applicable administrative standards.
1. Title 24, Part 1, California Code of Regulations: Chapter 7.
2. Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as indicated in the adoption matrix for Chapter 1, Division II.

1.10.4.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provisions of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.4.

OSHPD 4 adopts the following building standards in Title 24, Part 2: Chapters 2 through 10, 12, 14, 15, 16A, 17A, 18A, 19A, 20, 21A, 22A, 23, 24, 25, 26, 30, 31, 32, 33, 35 and Appendix L.

1.10.4.3 Identification of amendments. *For applications listed in Section 1.10.4, amendments appear in this code preceded with the acronym [OSHPD 4], unless the entire chapter is applicable.*

1.10.4.4 Reference to other chapters. *Where reference is made within the California Building Standards Code (CBSC) ~~this code~~ to sections in Chapters 16, 17, 18, 19, 21 and 22, the respective sections in Chapters 16A,17A, 18A, 19A, 21A and 22A shall apply instead.*

Authority - *Health and Safety Code Sections 127010, 127015 and 129790.*

References - *Health and Safety Code Sections 127010, 127015, 1275 and 129675 through 130070.*

1.10.5 OSHPD 5. *Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.*

Application - *Acute psychiatric hospital buildings.*

Enforcing agency - *Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD). The office shall also enforce the California Energy Commission – Energy Regulations, the Division of the State Architect – Access Compliance regulations, and the regulations of the Office of the State Fire Marshal for the above-stated facility type.*

1.10.5.1 Applicable administrative standards.
1. Title 24, Part 1, California Code of Regulations: Chapter 7.
2. Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as indicated in the adoption matrix for Chapter I, Division II.

1.10.5.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provision of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.5.

OSHPD 5 adopts the following building standards in Title 24, Part 2: Chapters 2 through 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 30, 31, 32, 33 and ~~33~~ 35.

1.10.5.3 Identification of amendments. *For applications listed in Section 1.10.5, amendments appear in this code preceded with the acronym [OSHPD 5].*

Authority - *Health and Safety Code Sections 127010, 127015, 1275 and 129850.*

References - *Health and Safety Code Sections 127010, 127015, 129680, 1275 and 129675 through 130070.*

1.10.6 OSHPD 6.

Specific scope of application of the agency responsible for enforcement, enforcement agency and the specific authority to adopt and enforce such provisions of this code, unless otherwise stated.

Application - *Chemical dependency recovery hospital buildings~~.~~ and any freestanding building under a general acute care or acute psychiatric hospital license where chemical dependency recovery services are provided.*

Enforcing agency - ~~*Office of Statewide Health Planning and Development (OSHPD). The office shall also enforce the Division of the State Architect – Access Compliance regulations and the regulations of the Office of the State Fire Marshal for the above-stated facility type.*~~ *Local building department.*

1.10.6.1 Applicable administrative standards.

1. *Title 24, Part 1, California Code of Regulations: Chapter 7.*

2. *Title 24, Part 2, California Code of Regulations: Sections 1.1 and 1.10, Chapter 1, Division I, and as indicated in the adoption matrix for Chapter I, Division II.*

1.10.6.2 Applicable building standards. *California Building Standards Code, Title 24, Parts 2, 3, 4, 5, 6, 9, 10 and 11.*

The provision of Title 24, Part 2, as adopted and amended by OSHPD, shall apply to the applications listed in Section 1.10.6.

OSHPD 6 adopts the following building standards in Title 24, Part 2:

Chapters 2 through 10, 12, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 30, 31, 32, 33 and ~~33~~ 35.

1.10.6.3 Identification of amendments. *For applications listed in Section 1.10.6, amendments appear in this code preceded with the acronym [OSHPD 6].*

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

DIVISION II
SCOPE AND ADMINISTRATION

PART 1 - SCOPE AND APPLICATION

SECTION 101- SCOPE AND GENERAL REQUIREMENTS

[A] 101.1 Title. These regulations shall be known as the *Building Code* of **[NAME OF JURISDICTION]**, hereinafter referred to as "this code."
…

[A] 101.4.7 Existing buildings. The provisions of the *International Existing Building Code* shall apply to matters governing the *repair*, *alteration*, *change of occupancy, addition* to and relocation of *existing buildings*.

[OSHPD 1] *The provisions of Chapters ~~2A~~ 2, 3A, 4A and 5A of the California Existing Building Code shall apply to all matters governing the repairs, alterations, change of occupancy, additions, and relocation of existing structures and portions thereof under OSHPD jurisdiction. All references to Chapters 3, 4 and 5 of the California Existing Building Code shall be replaced by equivalent provisions in Chapters 3A, 4A and 5A.*

[OSHPD 1R, 2, 4 & 5] *The provisions of the California Existing Building Code, Chapters 2, 3, 4 and 5 shall apply to all matters governing the repairs, alterations, change of occupancy, additions, and relocation of existing structures and portions thereof under OSHPD jurisdiction.*

…

SECTION 102 - APPLICABILITY

[A] 102.1 General. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable. Where, in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive shall govern.
…

[A] 102.4 Referenced codes and standards. The codes and standards referenced in this code shall be considered to be part of the requirements of this code to the prescribed extent of each such reference and as further regulated in Sections 102.4.1 and 102.4.2 *through 102.4.4.*

[A] 102.4.1 Conflicts. Where conflicts occur between provisions of this code and referenced codes and standards, the provisions of this code shall apply.

…

102.4.3 Code references. [OSHPD 1, 1R, 2, 3, 4, ~~&~~ 5 & 6] *All reference to International Codes or other similar codes in referenced standards shall be replaced by equivalent provisions in the California Building Standards Codes.*

102.4.4 Reference in standards. [OSHPD 1, 1R, 2, 3, 4, ~~&~~ 5, & 6] *All references listed in reference standards shall be replaced by referenced standards listed in Chapter 35 of this code, where applicable, and shall include all amendments to the reference standards in this code.*

…

SECTION 104 - DUTIES AND POWERS OF BUILDING OFFICIAL

[A] 104.1 General. The *building official* is hereby authorized and directed to enforce the provisions of this code.

[A] 104.2 Determination of compliance. The *building official* shall have the authority to determine compliance with this code, to render interpretations of this code and to adopt policies and procedures in order to clarify the application of its provisions. Such interpretations, policies and procedures:

1. Shall be in compliance with the intent and purpose of this code.
2. Shall not have the effect of waiving requirements specifically provided for in this code.

…

[A] 104.2.3 Alternative materials, design and methods of construction and equipment. The provisions of this code are not intended to prevent the installation of any material or to prohibit any design or method of construction not specifically prescribed by this code, provided that any such alternative has been *approved*.

Exception: Performance-based alternative materials, designs or methods of construction and equipment complying with the *International Code Council Performance Code*. This exception shall not apply to alternative structural materials or to alternative structural designs.

[A] 104.2.3.1 Approval authority. An alternative material, design or method of construction shall be *approved* where the *building official* finds that the proposed alternative is satisfactory and complies with Sections 104.2.3 through 104.2.3.7, as applicable.

[A] 104.2.3.2 Application and disposition. Where required, a request to use an alternative material, design or method of construction shall be submitted in writing to the *building official* for approval. Where the alternative material, design or method of construction is not *approved*, the *building official* shall respond in writing, stating the reasons the alternative was not *approved*.

[A] 104.2.3.3 Compliance with code intent. An alternative material, design or method of construction shall comply with the intent of the provisions of this code.

[Moved from existing Section 104.11]

[OSHPD 1, 1R, 2, 4 & 5] *Alternative system shall satisfy ASCE 7 Section 1.3, unless more restrictive requirements are established by this code for an equivalent system.*

[OSHPD 1, 1R, 2, 4 & 5] *Alternative systems shall also satisfy the California Administrative Code, Section 7-104.*

[A] 104.2.3.4 Equivalency criteria. An alternative material, design or method of construction shall, for the purpose intended, be not less than the equivalent of that prescribed in this code with respect to all of the following, as applicable:

1. Quality.
2. Strength.
3. Effectiveness.
4. Durability.
5. Safety, other than fire safety.
6. Fire safety.

[A] 104.2.3.5 Tests. Tests conducted to demonstrate equivalency in support of an alternative material, design or method of construction application shall be of a scale that is sufficient to predict performance of the end use configuration. Tests shall be performed by a party acceptable to the *building official*.

[A] 104.2.3.5.1 Fire Tests. Tests conducted to demonstrate equivalent fire safety in support of an alternative material, design or method of construction application shall be of a scale that is sufficient to predict fire safety performance of the end use configuration. Tests shall be performed by a party acceptable to the *building official*.

[A] 104.2.3.6 Reports. Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this code, shall comply with Sections 104.2.3.6.1 and 104.2.3.6.2.

[A] 104.2.3.6.1 Evaluation reports. Evaluation reports shall be issued by an *approved agency* and use of the evaluation report shall require approval by the *building official* for the installation. The alternate material, design or method of construction and product evaluated shall be within the scope of the building official's recognition of the *approved agency*. Criteria used for the evaluation shall be identified within the report and, where required, provided to the *building official*.

[A] 104.2.3.6.2 Other reports. Reports not complying with Section 104.2.3.6.1 shall describe criteria, including but not limited to any referenced testing or analysis, used to determine compliance with code intent and justify code equivalence. The report shall be prepared by a qualified engineer, specialist, laboratory or specialty organization acceptable to the *building official*. The *building official* is authorized to require design submittals to be prepared by, and bear the stamp of, a *registered design professional*.

[A] 104.2.3.7 Peer review. The *building official* is authorized to require submittal of a *peer review* report in conjunction with a request to use an alternative material, design or method of construction, prepared by a peer reviewer that is *approved* by the *building official*.

~~***104.11.3 Peer review. [OSHPD 1, 1R, 2, 4 & 5]*** *When peer review is required for new or existing buildings, it shall be performed pursuant to Section 1617A.1.41.*~~

104.2.3.8 ~~***104.11.4***~~ ***Earthquake monitoring instruments. [OSHPD 1 & 4]*** *The enforcement agency* ~~*may*~~ *shall be permitted to require earthquake monitoring instruments for any building that receives approval of an alternative system for the Lateral Force Resisting System (LFRS). There shall be a sufficient number of instruments to characterize the response of the building during an earthquake and shall include at least one tri-axial free field instrument or equivalent. A proposal for instrumentation and equipment specifications shall be forwarded to the enforcement agency for review and approval.*

The instruments shall be interconnected for common start and common timing. Each instrument shall be located so that access is maintained at all times and is unobstructed by room contents. A sign stating "MAINTAIN CLEAR ACCESS TO THIS INSTRUMENT" shall be posted in a conspicuous location.

The Owner of the building shall be responsible for the implementation of the instrumentation program. Maintenance and service of the instruments shall be in accordance with ~~*Appendix L,*~~ *Section L101.3 of this code.* ~~*1.101.3 of Part 2, Volume 2 of the California Building Code.*~~

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 2
DEFINITIONS

SECTION 201 – GENERAL

201.1 Scope. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.
201.2 Interchangeability. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

…

SECTION 202 – DEFINITIONS

…

ACTIVE EARTHQUAKE FAULT. [OSHPD 1, 1R, 2, 4 & 5] *A fault that has been the source of earthquakes or is recognized as a potential source of earthquakes, including those that have exhibited surface displacement within Holocene time (about 11,000 years) as determined by California Geological Survey (CGS) under the Alquist-Priolo Earthquake Fault Zoning Act, those included as type A or type B faults for the U.S. Geological Survey (USGS) National Seismic Hazard Maps, and faults considered to have been active in Holocene time by any authoritative source, federal, state or local governmental agency.*

…

BASE. [OSHPD 1, 1R, 2, 4 & 5] *See ASCE 7.*
…

DISTANCE FROM AN ACTIVE EARTHQUAKE FAULT. [OSHPD 1, 1R, 2, 4 & 5] *Distance measured from the nearest point of the building to the closest edge of an Alquist-Priolo Earthquake fault zone for an active fault, if such a map exists, or to the closest mapped splay of the fault.*

…

FREESTANDING ACUTE PSYCHIATRIC BUILDING (APB). [OSHPD 5] *A freestanding building, as defined in the California Administrative Code Section 7-111, that provides 24-hour inpatient Acute Psychiatric Services as defined in the Health and Safety Code (H&SC) Section 1250(b) or as special services in accordance with H&SC Section 1255(a)(5) of a general acute care hospital defined in H&SC Section 1250(a) and all structures, equipment and services required for their operation or access/egress.*
…

[OSHPD 1, 1R, 2, 4 & 5] FREESTANDING BUILDING OR STRUCTURE. *A building or structure, that is freestanding, as defined in the California Administrative Code Section 7-111, and ~~that~~ is separated from any adjacent ~~to a licensed hospital~~ building or structure that meets the following criteria:*

1. *Structural separation complies with the applicable provisions of this code.*
2. *Fire-resistance-rated construction separations ~~that~~ complies with the applicable provisions of the California Building Standards code.*
3. *Buildings on the same lot ~~that~~ complies with the height and area limitations of this code.*

…

FREESTANDING SKILLED NURSING BUILDING (SNB). [OSHPD 2] *A freestanding building~~,~~ as defined in the California Administrative Code Section 7-111,~~-~~that provides skilled nursing and/or intermediate care as defined in the Health and Safety Code Section 1250(c) or (d), and all structures, equipment and services required for their operation or access/egress.*

…

GENERAL ACUTE CARE BUILDING (GAC Building). [OSHPD 1] *Hospital buildings, as defined in the California Administrative Code Section 7-111, providing general acute care services, and all structures, equipment and services required for their continuous operation or access/egress. ccc*

…

INCIDENTAL STRUCTURAL ALTERATIONS, ADDITIONS OR REPAIRS. [OSHPD 1, 1R, 2, 4 & 5] *Refer to Chapter 2 of the California Existing Building Code.*

…

MAJOR STRUCTURAL ALTERATIONS, ADDITIONS OR REPAIRS. [OSHPD 1, 1R, 2, 4 & 5] Refer to Chapter 2 of the California Existing Building Code.

…

MINOR STRUCTURAL ALTERATIONS, ADDITIONS OR REPAIRS. [OSHPD 1, 1R, 2, 4 & 5] *Refer to Chapter 2 of the California Existing Building Code.*

…

~~NEXT GENERATION ATTENUATION WEST 2 (NGAWEST 2). [OSHPD 1 & 4]~~
~~Attenuation relations used for the 2014 United States Geological Survey (USGS) seismic hazards maps (for the Western United States) or their equivalent as determined by the enforcement agency.~~

…

NPC 1, NPC 2, NPC 3/NPC 3R, NPC 4, NPC-4D and NPC 5. [OSHPD 1] *Building nonstructural performance categories for Hospital Buildings defined in Table 11.1 of California Administrative Code (Part 1, Title 24 CCR), Chapter 6.*

…

INCIDENTAL STRUCTURAL ALTERATIONS, ADDITIONS OR REPAIRS. [OSHPD 1, 1R, 2, 4 & 5] *Refer to Chapter 2 of the California Existing Building Code.*

…

IRREGULAR STRUCTURE. [OSHPD 1, 1R, 2, 4 & 5] *A structure designed as having one or more plan or vertical irregularities per ASCE 7 Section 12.3.*

…

OFF-SITE CONSTRUCTION. [OSHPD 1, 1R, 2, 4 & 5] *A modular building, modular component, panelized system or tiny house which is designed and constructed in compliance with Sections 1710 or 1710A of this code and is wholly or in substantial part fabricated or assembled in off-site fabrication plants for installation or assembly and installation - on a separate building site and has been fabricated in such a manner that all parts or processes cannot be inspected at the installation site without disassembly, damage to, or destruction thereof.*

…

RETROFIT. [OSHPD 1, 1R, 2, 4 & 5] *The construction of any new element or system, or the alteration of any existing element or system required to bring an existing building, or portion thereof, conforming to earlier code requirements, into conformance with standards of the currently effective California Building Standards Code.*

…

SIGNIFICANT LOSS OF FUNCTION. [OSHPD 1, 1R, 2, 4 & 5] *Significant loss of function for equipment or components means the equipment or component cannot be restored to its original function by competent technicians after a design earthquake because the equipment or component require parts that are not normally stocked by the owner or not readily available.*

…

SURFACE MOUNTED COMPONENT. [OSHPD 1, 1R, 2, 4 & 5] *As referenced in CBC Section 1705A.14.3.1 ~~1705A.13.3.1~~ Exceptions, a component directly attached to only one continuous flat surface of wall, floor or roof, without supports. Surface mounted components are directly attached to a surface by attachments (without any supports) and are not rigidly connected to anything else (e. g., distribution system, other components).*

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 14
EXTERIOR WALLS

SECTION 1401 - GENERAL

1401.1 Scope. The provisions of this chapter shall establish the minimum requirements for *exterior walls*, exterior wall assemblies, *exterior wall coverings*, *exterior wall* openings, exterior windows and doors, exterior soffits and fascias, and architectural *trim.*

…

SECTION 1404 - INSTALLATION OF WALL COVERINGS

1404.1 General. *Exterior wall coverings* shall be designed and constructed in accordance with the applicable provisions of this section.

1404.1.1 Additional requirements. [OSHPD 1, 1R, 2, 4, & 5] *In addition to the requirements of ~~Sections 1404.6, 1404.7, 1404.8, 1404.9 and 1404.10~~ Section 1404, the installation of anchored or adhered veneer shall comply with applicable provisions of Section ~~1410~~ 1413.*

…

SECTION ~~1410~~ 1413 - ADDITIONAL REQUIREMENTS FOR ANCHORED AND ADHERED VENEER [OSHPD 1, 1R, 2, 4 & 5]

1413.1 ~~1410.1~~ General. *In no case shall veneer be considered as part of the backing in computing strength or deflection, nor shall it be considered a part of the required thickness of the backing.*

Veneer shall be anchored in a manner which will not allow relative movement between the veneer and the wall. Anchored or adhered veneer shall not be used on overhead horizontal surfaces.

1413.2 ~~***1410.2***~~ ***Adhered veneer.*** *Units of tile, masonry, stone or terra cotta which exceed 5/8 inch (15.9* ~~*16*~~ *mm) in thickness shall be applied as for anchored veneer where used over exit ways or more than 20 feet (6.1 m* ~~*6096 mm*~~*) in height above adjacent ground elevation.*

1413.2.1 ~~***1410.2.1***~~ ***TMS 402, Section 13.3.2.1 Bond strength and tests.***
~~*Veneer shall develop a bond to the backing in accordance with TMS 402, Section 12.3.2.4.*~~

Modify TMS 402, Section 13.3.2.1 by the following: The bond developed between adhered veneer units and backing shall have a shear strength of at least 50 psi (345 kPa) based on gross unit bonded area when tested in the laboratory in accordance with ASTM C482, using a field-constructed mock-up, having the specified unit, mortar and substrate, irrespective of mortar or veneer type used.

Not less than two shear tests shall be performed for the adhered veneer between the units and the supporting element. At least one shear test shall be performed at each building for each 5,000 square feet (465 m^2) of ~~*floor*~~ *wall area or fraction thereof.*

1413.2.2 TMS 402, Section 13.3.2.2. *Replace TMS 402, Section 13.3.2.2 (c) by the following:*

(c) The weight of adhered masonry veneer units shall not exceed 15 psf (73 kg/m2).

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 15
ROOF ASSEMBLIES AND ROOFTOP STRUCTURES

SECTION 1501 - GENERAL

1501.1 Scope. The provisions of this chapter shall govern the design, materials, construction and quality of *roof assemblies*, and *rooftop structures*.

…

SECTION 1511—ROOFTOP STRUCTURES

[BG] 1511.1 General. The provisions of this section shall govern the construction of *rooftop structures*.

…

1511.10 ~~***1511.9***~~ ***Photovoltaic (PV) panel systems. [OSHPD 1, 1R, 2, 4, & 5]*** *Rooftop-mounted photovoltaic panels and modules shall be listed and labeled in accordance with* ~~*UL 1703 or with both*~~ ~~*UL 61730-1 and UL 61730-2*~~ *Section 3111.3.1 and* ~~*shall be*~~ *installed in accordance with the manufacturer's printed installation instructions.*

1511.10.1 ~~***1511.9.1***~~ ***Design*** ~~***Installation***~~***. [OSHPD 1, 1R, 2, 4 & 5]*** *Supports and attachments of photovoltaic panels to the roof structure, the panels, modules and components shall be designed* ~~*for applied loads per*~~ *in accordance with this code:* ~~*, and shall comply with industry standards determined applicable by the enforcement agency.*~~

1. *Seismic design* ~~*requirements*~~ *shall be in accordance with* ~~*determined from*~~ *ASCE 7 Section 13.6.12.*
2. *Wind design pressures shall be determined from ASCE 7 Section 29.4.3 or 29.4.4 using effective wind area per ASCE 7 Section 26.2.*

~~*Calculations and drawings of*~~ *Construction documents for the supports and attachments shall be submitted to the enforcement agency for* ~~*review*~~ *approval.*

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 16
STRUCTURAL DESIGN

SECTION 1601 – GENERAL

1601.1 Scope. The provisions of this chapter shall govern the structural design of *buildings*, *structures* and portions thereof.

1601.1.1 Application. [OSHPD 1R, 2, & 5] *The scope of application of Chapter 16 is as follows:*
1. Reserved for DSA-SS.
2. Structures regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD), which include hospital buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility ~~B~~ buildings and acute psychiatric hospital buildings, as listed in Sections 1.10.1, 1.10.2 and 1.10.5.

1601.1.2 Amendments in this chapter. [OSHPD 1R, 2, & 5] *OSHPD adopts this chapter as amended.*

~~Exception:~~ *~~Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:~~*

1601.1.3 Identification of amendments. [OSHPD 1R, 2, & 5]

1. Reserved for DSA-SS.
*2. **[OSHPD 1R, 2, & 5]** Office of Statewide Health Hospital Planning and Development (OSHPD) amendments **~~[OSHPD]~~** appear in this chapter preceded with the appropriate acronym, as follows:*
***[OSHPD 1R]** – For applications listed in Section 1.10.1.*
***[OSHPD 2]** – For applications listed in Section 1.10.2.*
***[OSHPD 5]** – For applications listed in Section 1.10.5.*

1601.1.4 *Reserved for DSA-SS.*

1601.1.5 ~~1601.1.4~~ Additional Amendments. [OSHPD 1R, 2, & 5]
*1. **[OSHPD 1R, 2 & 5]** In addition to the amendments in this chapter, these buildings shall comply with the requirements of Sections 1617A.1.1, 1617A.1.4, 1617A.1.11-1617A.1.13, 1617A.1.18, ~~– 1617A.1.20,~~ 1617A.1.27, 1617A.1.39 and 1617A.1.41.*

2. Reserved for DSA-SS.

…

SECTION 1604 - GENERAL DESIGN REQUIREMENTS

1604.1 General. *Building*, *structures* and parts thereof shall be designed and constructed in accordance with *strength* design, *load and resistance factor* design, *allowable stress design*, empirical design or conventional construction methods, as permitted by the applicable material chapters and referenced standards.

…

1604.5 Risk category. Each *building* and *structure* shall be assigned a *risk category* in accordance with Table 1604.5. Where a referenced standard specifies an occupancy category, the *risk category* shall not be taken as lower than the occupancy category specified therein. Where a referenced standard specifies that the assignment of a *risk category* be in accordance with ASCE 7, Table 1.5-1, Table 1604.5 shall be used in lieu of ASCE 7, Table 1.5-1.

Exceptions:

1. The assignment of *buildings* and *structures* to Tsunami *Risk Categories* III and IV is permitted to be in accordance with Section 6.4 of ASCE 7.
2. Freestanding parking garages not used for the storage of emergency services vehicles or not providing means of egress for *buildings* or *structures* assigned to a higher risk category shall be assigned to Risk Category II.

TABLE 1604.5 - RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: • Agricultural facilities. • Certain temporary facilities. • Minor storage facilities.
II	Buildings and other structures except those listed in Risk Categories I, III and IV.
III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to: • Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300. • Buildings and other structures containing one or more public assembly spaces, each having an occupant load greater than 300 and a cumulative occupant load of these public assembly spaces of greater than 2,500. • Buildings and other structures containing Group E or Group I-4 occupancies or combination thereof, with an occupant load greater than 250. • Buildings and other structures containing educational occupancies for students above the 12th grade with an occupant load greater than 500. • ***[OSHPD 2 & 5]*** Skilled *nursing facilities, intermediate care facilities and acute psychiatric hospitals. , Group I-2 occupancy with 50 or more care recipients.* • ***[OSHPD 5]*** *Acute psychiatric hospitals, Group I-2 occupancy with 50 or more care recipients.* • Group I-3, Condition 1 occupancies. • Any other occupancy with an occupant load greater than 5,000.[a] • Power-generating stations with individual power units rated 75 MW_{AC} (megawatts, alternating current) or greater, water treatment facilities for potable water, wastewater treatment facilities and other public utility facilities not included in Risk Category IV. • Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials that:c

	• Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and • Are sufficient to pose a threat to the public if released.[b]
IV	Buildings and other structures designated as essential facilities and buildings where loss of function represents a substantial hazard to occupants or users, including but not limited to: • Group I-2 occupancies. • [**OSHPD 5**] *Group I-2, Condition 2 occupancies having emergency surgery or emergency treatment facilities.* • Ambulatory care facilities having emergency surgery or emergency treatment facilities. • Group I-3 occupancies other than Condition 1. • Fire, rescue, ambulance and police stations and emergency vehicle garages • Designated earthquake, hurricane or other emergency shelters. • Designated emergency preparedness, communications and operations centers and other facilities required for emergency response. • Public utility facilities providing power generation, potable water treatment, or wastewater treatment. • Power-generating stations and other public utility facilities required as emergency backup facilities for *Risk Category* IV structures. • Buildings and other structures containing quantities of highly toxic materials that: • Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and • Are sufficient to pose a threat to the public if released.[b] • Aviation control towers, air traffic control centers and emergency aircraft hangars. • Buildings and other structures having critical national defense functions. • Water storage facilities and pump structures required to maintain water pressure for fire suppression.

a. For purposes of occupant load calculation, occupancies required by Table 1004.5 to use *gross floor area* calculations shall be permitted to use *net floor areas* to determine the total occupant load. The floor area for vehicular drive aisles shall be permitted to be excluded in the determination of net floor area in parking garages.

b. Where approved by the building official, the classification of buildings and other structures as Risk Category III or IV based on their quantities of toxic, highly toxic or explosive materials is permitted to be reduced to Risk Category II, provided that it can be demonstrated by a hazard assessment

in accordance with Section 1.5.3 of ASCE 7 that a release of the toxic, highly toxic or explosive materials is not sufficient to pose a threat to the public.

1604.5.1 Multiple occupancies. Where a *building* or *structure* is occupied by two or more occupancies not included in the same *risk category*, it shall be assigned the classification of the highest *risk category* corresponding to the various occupancies. Where *buildings* or *structures* have two or more portions that are structurally separated, each portion shall be separately classified. Where a separated portion of a *building* or *structure* provides required access to, required egress from or shares life safety systems, designated seismic systems, emergency power systems, or emergency and egress lighting systems with another portion having a higher *risk category*, or provides required electrical, communications, mechanical, plumbing or conveying support to another portion assigned to *Risk Category* IV, both portions shall be assigned to the higher *risk category*.

Exception: Where a *storm shelter* designed and constructed in accordance with ICC 500 is provided in a *building*, *structure* or portion thereof normally occupied for other purposes, the *risk category* for the normal occupancy of the *building* shall apply unless the *storm shelter* is a designated emergency shelter in accordance with Table 1604.5.

…

SECTION 1607 - LIVE LOADS

1607.1 General. *Buildings*, *structures*, and parts thereof shall be designed to resist the effects of *live loads*.

…

1607.14.3.5 Ballasted photovoltaic panel systems. Roof structures that provide support for ballasted *photovoltaic panel systems* shall be designed, or analyzed, in accordance with Section 1604.4; checked in accordance with Section 1604.3.6 for deflections; and checked in accordance with Section 1611 for ponding. ***[OSHPD 1R, 2, & 5]*** *Ballasted photovoltaic panel systems shall be considered as an alternative system.*

…

SECTION 1613 - EARTHQUAKE LOADS

1613.1 Scope. Every structure, and portion thereof, including nonstructural components that are permanently attached to *structures* and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with Chapters 11, 12, 13, 15, 17 and 18 of ASCE 7, as applicable. The *seismic design*

category for a *structure* is permitted to be determined in accordance with Section 1613 or ASCE 7.

Exceptions:

1. Detached one- and two-family *dwellings*, assigned to *Seismic Design Category* A, B or C.
2. The *seismic force-resisting system* of wood-frame *buildings* that conform to the provisions of Section 2308 are not required to be analyzed as specified in this section. ***[OSHPD 1R, 2 & 5]*** *Not permitted by OSHPD, see Section 2308.*
3. Agricultural storage *structures* intended only for incidental human occupancy.
4. *Structures* that require special consideration of their response characteristics and environment that are not addressed by this code or ASCE 7 and for which other regulations provide seismic criteria, such as vehicular bridges, electrical transmission towers, hydraulic *structures*, buried utility lines and their appurtenances and nuclear reactors.
5. References within ASCE 7 to Chapter 14 shall not apply, except as specifically required herein.
6. *Temporary structures* complying with Section 3103.6.1.4.

~~6. ***[OSHPD 1R, 2 & 5]*** *Seismic Design Category shall be in accordance with exception to Section 1613.2.5.*~~

…

1613.2 Determination of seismic design category. *Structures* shall be assigned to a *seismic design category* *(Relocated from existing Section 1613.2.5)* D or higher based on one of the following methods unless the authority having *jurisdiction* or geotechnical data determines that *Site Class* DE, E or F soils are present at the site:

1. Based on the structure *risk category* using Figures 1613.2(1) through 1613.2(7).
2. Determined in accordance with ASCE 7.

Where Site Class DE, E or F soils are present, the *seismic design category* shall be determined in accordance with ASCE 7.

…

[Delete existing amendments to deleted Sections 1613.2.1, 1613.2.5, 1613.2.5.1 & 1613.2.5.2, and Tables 1613.2.3(1) & 1613.2.3(2)]

…

1613.4 Ballasted photovoltaic panel systems. Ballasted, roof-mounted *photovoltaic panel systems* need not be rigidly attached to the roof or supporting *structure*. Ballasted, unattached PV panel systems shall be designed and installed only on roofs with slopes not more than 1 unit vertical in 12 units horizontal. Ballasted, unattached *PV panel systems* shall be designed to accommodate sliding in accordance with ASCE 7 Chapter

13. ***[OSHPD 1R, 2 & 5]*** *Ballasted photovoltaic panel systems shall be considered as an alternative system.*

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 16A
STRUCTURAL DESIGN

SECTION 1601*A* – GENERAL

1601*A*.1 Scope. The provisions of this chapter shall govern the structural design of *buildings*, *structures* and portions thereof.

1601A.1.1 Application. *The scope of application of Chapter 16A is as follows:*

1. Reserved for DSA-SS.

2. Applications listed in Sections 1.10.1 and 1.10.4, regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD). These applications include hospitals and correctional treatment centers.

1601A.1.2 Amendments in this chapter. *OSHPD adopt this chapter and all amendments.*

Exception: *Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:*

1. Reserved for DSA-SS.

2. Office of Statewide ~~Health~~ Hospital Planning and Development:

[OSHPD 1] – *For applications listed in Section 1.10.1.*

[OSHPD 4] – *For applications listed in Section 1.10.4.*

…

SECTION 1604*A* - GENERAL DESIGN REQUIREMENTS

1604*A*.1 General. *Building*, *structures* and parts thereof shall be designed and constructed in accordance with *strength* design, *load and resistance factor* design,

allowable stress design, empirical design or conventional construction methods, as permitted by the applicable material chapters and referenced standards.

…

1604*A*.4 Analysis. *Load effects* on structural members and their connections shall be determined by methods of structural analysis that take into account equilibrium, general stability, geometric compatibility and both short- and long-term material properties.

Members that tend to accumulate residual deformations under repeated service *loads* shall have included in their analysis the effects of added deformations expected to occur during their *service life*.

Any system or method of construction to be used shall be based on a rational analysis in accordance with well-established principles of mechanics. Such analysis shall result in a system that provides a complete *load* path capable of transferring *loads* from their point of origin to the load-resisting elements.

The total lateral force shall be distributed to the various vertical elements of the lateral force-resisting system in proportion to their rigidities, considering the rigidity of the horizontal bracing system or *diaphragm*. Rigid elements assumed not to be a part of the lateral force-resisting system are permitted to be incorporated into *buildings* provided that their effect on the action of the system is considered and provided for in the design. ~~*Structural analysis shall explicitly include consideration of stiffness of diaphragms in accordance with ASCE 7, Section 12.3.1.*~~ Where a *diaphragm* is not permitted to be idealized as either flexible or rigid in accordance with ASCE 7 or for wood diaphragms in accordance with AWC SDPWS, the structure shall be analyzed and designed utilizing one of the following procedures:

1. An envelope analysis of the structure using a flexible and rigid diaphragm analysis separately and designing each component for the more severe load condition.
2. A semirigid diaphragm analysis and design.

Where required by ASCE 7, provisions shall be made for the increased forces induced on resisting elements of the structural system resulting from torsion due to eccentricity between the center of application of the lateral forces and the center of rigidity of the lateral force-resisting system.

Every *structure* shall be designed to resist the effects caused by the forces specified in this chapter, including overturning, uplift and sliding. Where sliding is used to isolate the elements, the effects of friction between sliding elements shall be included as a force.
…

1604*A*.5 Risk category. Each *building* and *structure* shall be assigned a *risk category* in accordance with Table 1604*A*.5. Where a referenced standard specifies an occupancy category, the *risk category* shall not be taken as lower than the occupancy

category specified therein. Where a referenced standard specifies that the assignment of a *risk category* be in accordance with ASCE 7, Table 1.5-1, Table 1604*A*.5 shall be used in lieu of ASCE 7, Table 1.5-1.

Exceptions:

1. The assignment of *buildings* and *structures* to Tsunami *Risk Categories* III and IV is permitted to be in accordance with Section 6.4 of ASCE 7.
2. Freestanding parking garages not used for the storage of emergency services vehicles or not providing means of egress for *buildings* or *structures* assigned to a higher risk category shall be assigned to Risk Category II.

TABLE 1604*A*.5 - RISK CATEGORY OF BUILDINGS AND OTHER STRUCTURES

RISK CATEGORY	NATURE OF OCCUPANCY
I	Buildings and other structures that represent a low hazard to human life in the event of failure, including but not limited to: • Agricultural facilities. • Certain temporary facilities. • Minor storage facilities.
II	Buildings and other structures except those listed in Risk Categories I, III and IV.

III	Buildings and other structures that represent a substantial hazard to human life in the event of failure, including but not limited to:
	• Buildings and other structures whose primary occupancy is public assembly with an occupant load greater than 300.
	• Buildings and other structures containing one or more public assembly spaces, each having an occupant load greater than 300 and a cumulative occupant load of these public assembly spaces of greater than 2,500.
	• Buildings and other structures containing Group E or Group I-4 occupancies or combination thereof, with an occupant load greater than 250.
	• Buildings and other structures containing educational occupancies for students above the 12th grade with an occupant load greater than 500.
	• Group I-3, Condition 1 occupancies.
	• Any other occupancy with an occupant load greater than 5,000.[a]
	• Power-generating stations with individual power units rated 75 MW_{AC} (megawatts, alternating current) or greater, water treatment facilities for potable water, wastewater treatment facilities and other public utility facilities not included in Risk Category IV.
	• Buildings and other structures not included in Risk Category IV containing quantities of toxic or explosive materials that:
	  • Exceed maximum allowable quantities per control area as given in Table 307.1(1) or 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and
	  • Are sufficient to pose a threat to the public if released.[b]

IV	Buildings and other structures designated as essential facilities and buildings where loss of function represents a substantial hazard to occupants or users, including but not limited to:
	• ***[OSHPD 1 & 4]*** *General Acute-care Hospital Buildings, General Acute-care Hospital Buildings providing only acute medical rehabilitation center services, and Correctional Treatment Center Buildings and all structures required for their continuous operation or access/egress.*
	• Group I-2 occupancies.
	• Ambulatory care facilities having emergency surgery or emergency treatment facilities.
	• Group I-3 occupancies other than Condition 1.
	• Fire, rescue, ambulance and police stations and emergency vehicle garages
	• Designated earthquake, hurricane or other emergency shelters.
	• Designated emergency preparedness, communications and operations centers and other facilities required for emergency response.
	• Public utility facilities providing power generation, potable water treatment, or wastewater treatment.
	• Power-generating stations and other public utility facilities required as emergency backup facilities for *Risk Category* IV structures.
	• Buildings and other structures containing quantities of highly toxic materials that:
	  • Exceed maximum allowable quantities per control area as given in Table 307.1(2) or per outdoor control area in accordance with the *International Fire Code*; and
	  • Are sufficient to pose a threat to the public if released.[b]
	• Aviation control towers, air traffic control centers and emergency aircraft hangars.
	• Buildings and other structures having critical national defense functions.
	• Water storage facilities and pump structures required to maintain water pressure for fire suppression.

c. For purposes of occupant load calculation, occupancies required by Table 1004.5 to use *gross floor area* calculations shall be permitted to use *net floor areas* to determine the total occupant load. The floor area for vehicular drive aisles shall be permitted to be excluded in the determination of net floor area in parking garages.

d. Where approved by the building official, the classification of buildings and other structures as Risk Category III or IV based on their quantities of toxic, highly toxic or explosive materials is permitted to be reduced to Risk Category II, provided that it can be demonstrated by a hazard assessment in accordance with Section 1.5.3 of ASCE 7 that a release of the toxic, highly toxic or explosive materials is not sufficient to pose a threat to the public.

1604*A*.5.1 Multiple occupancies. Where a *building* or *structure* is occupied by two or more occupancies not included in the same *risk category*, it shall be assigned the classification of the highest *risk category* corresponding to the various occupancies. Where *buildings* or *structures* have two or more portions that are structurally separated, each portion shall be separately classified. Where a separated portion of a *building* or *structure* provides required access to, required egress from or shares life safety systems, designated seismic systems, emergency power systems, or emergency and egress lighting systems with another portion having a higher *risk category*, or provides required electrical, communications, mechanical, plumbing or conveying support to

another portion assigned to *Risk Category* IV, both portions shall be assigned to the higher *risk category*.

Exception: Where a *storm shelter* designed and constructed in accordance with ICC 500 is provided in a *building*, *structure* or portion thereof normally occupied for other purposes, the *risk category* for the normal occupancy of the *building* shall apply unless the *storm shelter* is a designated emergency shelter in accordance with Table 1604*A*.5.

…

SECTION 1605*A* - LOAD COMBINATIONS

1605*A*.1 General. *Buildings* and *other structures* and portions thereof shall be designed to resist the strength load combinations specified in ASCE 7, Section 2.3, the a*llowable stress design* load combinations specified in ASCE 7, Section 2.4, or the alternative a*llowable stress design* load combinations of Section 1605*A*.2.

Exceptions:

1. The modifications to load combinations of ASCE 7, Section 2.3, ASCE 7, Section 2.4 and Section 1605.2 specified in ASCE 7 Chapters 18 and 19 shall apply.
2. Where the *allowable stress design* load combinations of ASCE 7, Section 2.4 are used, flat roof snow *loads* of 45 pounds per square foot (2.15 kN/m^2) and *roof live loads* of 30 pounds per square foot (1.44 kN/m^2) or less need not be combined with seismic load. Where flat roof snow *loads* exceed 45 pounds per square foot (2.15 kN/m^2), 15 percent shall be combined with seismic loads.
3. Where the *allowable stress design* load combinations of ASCE 7 Section 2.4 are used, crane hook loads need not be combined with *roof live loads* or with more than three-fourths of the snow load or one-half of the wind loads.
4. Where design for tornado loads is required, the alternative *allowable stress design* load combinations of Section 1605*A*.2 shall not apply when tornado loads govern the design.

1605*A*.1.1 Stability. Regardless of which load combinations are used to design for strength, where overall *structure* stability (such as stability against overturning, sliding, or buoyancy) is being verified, use of the load combinations specified in Section 2.3 or 2.4 of ASCE 7, and in Section 1605*A*.2 shall be permitted. Where the load combinations specified in ASCE 7, Section 2.3 are used, strength reduction factors applicable to soil resistance shall be provided by a *registered design professional.* The stability of retaining walls shall be verified in accordance with Section 1807.2.3. *When using allowable stress design, factor of safety for soil bearing values shall not be less than the overstrength factor of the structures supported. Strength design for foundation geotechnical capacity shall be in accordance with ASCE 7, Section 12.13.5 for all strength design load combinations, except that Resistance Factor (Ø) shall be permitted to be 1.0 for load combinations with overstrength factor. Allowable stress design for foundation geotechnical capacity shall be in accordance with ASCE 7, Section 12.13.6 for all allowable stress design load combinations, and shall be established to be consistent with strength design requirements in ASCE 7, Section 12.13.5.*

…

1605A.3 Modifications to load combinations in ICC 300. *Modify the text of ICC 300 as follows:*

> ~~***1605A.3.1 ICC 300, Section 303.5.2.*** *Modify Section 303.5.2 by adding Equation 3-5a as follows:*~~
> ~~*D + 0.4L + Z* ***(Equation 3-5a)***~~
>
> ***1605A.3.1 ~~1605A.3.2~~ ICC 300, Section 303.5.3.*** *Modify Section 303.5.3 as follows:*
>
> *The uniform live load L used in Equation 3-2 and 3-4 may be taken as zero when evaluating elements supporting the handrail/guard provided those elements do not also support L.*

…

SECTION 1607*A* - LIVE LOADS

1607*A*.1 General. *Buildings, structures*, and parts thereof shall be designed to resist the effects of *live loads*. ~~*and Section 1602A.1*~~

…

TABLE 1607.1—MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L_o, AND MINIMUM CONCENTRATED LIVE LOADS

OCCUPANCY OR USE			UNIFORM (psf)	CONCENTRATED (pounds)	ALSO SEE SECTION
1.	Apartments (see residential)		—	—	—
2.	Access floor systems	Office use	50	2,000	—
		Computer use	100	2,000	—
3.	Armories and drill rooms		150[a]	—	—
4.	Assembly areas	Fixed seats (fastened to floor)	60[a]	—	—
		Lobbies	100[a]		
		Movable seats	100[a]		
		Stage floors	150[a]		
		Platforms (assembly)	100[a]		
		Bleachers, folding and telescopic seating and grandstands	100[a] (See Section 1607.18)		
		Stadiums and arenas with fixed seats (fastened to the floor)	60[a] (See Section 1607.18)		
		Other assembly areas	100[a]		
5.	Balconies and decks		1.5 times the live load for the area served, not required to exceed 100	—	—
6.	Catwalks for maintenance and service access		40	300	—
7.	Cornices		60	—	—

8.	Corridors	First floor	100	—	—
		Other floors	Same as occupancy served except as indicated		
9.	Dining rooms and restaurants		100[a]	—	—
10.	Dwellings (see residential)		—	—	—
11.	Elevator machine room and control room grating (on area of 2 inches by 2 inches)		—	300	—
12.	Finish light floor plate construction (on area of 1 inch by 1 inch)		—	200	—
13.	Fire escapes		100	—	—
		On single-family dwellings only	40		
14.	Fixed ladders		See Section 1607.10		—
15.	Garages and vehicle floors	Passenger vehicle garages	40[c]	See Section 1607.7	—
		Trucks and buses	See Section 1607.8		
		Fire trucks and emergency vehicles	See Section 1607.8		
		Forklifts and movable equipment	See Section 1607.8		
16.	Handrails, guards and grab bars		See Section 1607.9		—
17.	Helipads	Helicopter takeoff weight 3,000 pounds or less	40[a]	See Section 1607.6.1	Section 1607.6
		Helicopter takeoff weight more than 3,000 pounds	60[a]	See Section 1607.6.1	Section 1607.6
18.	Hospitals	Corridors above first floor	80	1,000	—
		Operating rooms, laboratories	60	1,000	
		Patient rooms	40	1,000	
19.	Hotels (see residential)		—	—	—
20.	Libraries[d]	Corridors above first floor	80	1,000	—
		Reading rooms	60	1,000	—
		Stack rooms	150[b]	1,000	Section 1607.17

TABLE 1607*A*.1—MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS, L_o, AND MINIMUM CONCENTRATED LIVE LOADS—continued

OCCUPANCY OR USE			UNIFORM (psf)	CONCENTRATED (pounds)	ALSO SEE SECTION
28.	Roofs—continued	Primary roof members exposed to a work floor:			Section 1607.15
		Single panel point of lower chord of roof trusses or any point along primary structural members supporting roofs over manufacturing, storage warehouses, and repair garages	—	2,000	
		All other primary roof members	—	300	
		All roof surfaces subject to maintenance workers	—	300	
29.	Schools	Classrooms	40	1,000	—
		Corridors above first floor	80	1,000	
		First-floor corridors	100	1,000	

30.	Scuttles, skylight ribs and accessible ceilings		—	200	—
31.	Sidewalks, vehicular driveways and yards, subject to trucking		250[b]	8,000	Section 1607.19
32.	Stairs and exits	One- and two-family dwellings	40	300	Section 1607.20
		All other	100	300	Section 1607.20
33.	Storage areas above ceilings		20	—	—
34.	Storage warehouses (shall be designed for heavier loads if required for anticipated storage)	Heavy	250[b]	—	—
		Light	125[b]		
35.	Stores	Retail:			—
		First floor	100	1,000	
		Upper floors	75	1,000	
		Wholesale, all floors	125[b]	1,000	
36.	Vehicle barriers		See Section 1607.11		—
37.	Walkways and elevated platforms (other than exitways)		60	—	—
38.	Yards and terraces, pedestrian		100[a]	—	—
39. ~~*38.*~~	*Storage racks and wall-hung cabinets.*		*Total loads[d]*		

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm^2, 1 square foot = 0.0929 m^2, 1 pound per square foot = 0.0479 kN/m^2, 1 pound = 0.004448 kN.

a. Live load reduction is not permitted.

b. Live load reduction is only permitted in accordance with Section 1607.13.1.2 or Item 1 of Section 1607.13.2.

c. Live load reduction is only permitted in accordance with Section 1607.13.1.3 or Item 2 of Section 1607.13.2.

d. *The* minimum *vertical design live load shall be as follows:*

Paper media:
12-inch-deep (305 mm) shelf 33 pounds per lineal foot (482 N/m)
15-inch-deep (381 mm) shelf 41 pounds per lineal foot (598 N/m), or
33 pounds per cubic foot (5183 N/m^3) per total volume of the rack or cabinet, whichever is less.
Film media:
18-inch-deep (457 mm) shelf 100 pounds per lineal foot (1459 N/m), or
50 pounds per cubic foot (7853 N/m3) per total volume of the rack or cabinet, whichever is less.
Other media:
20 pounds per cubic foot (311 N/m3) or 20 pounds per square foot (958 Pa), whichever is less, but not less than actual loads.

…

1607*A*.14 Reduction in uniform roof live loads. The minimum uniformly distributed *live loads* of roofs, *marquees* and *canopies*, L_o, in Table 1607*A*.1 are permitted to be reduced in accordance with Section 1607*A*.14.1.

…

1607*A*.14.3.5 Ballasted photovoltaic panel systems. Roof structures that provide support for ballasted *photovoltaic panel systems* shall be designed, or analyzed, in accordance with Section 1604*A*.4; checked in accordance with Section 1604*A*.3.6 for deflections; and checked in accordance with Section 1611*A* for ponding. ***[OSHPD 1 & 4]*** *Ballasted photovoltaic panel systems shall be considered as an alternative system.*

…

1607A.14.4 ~~***1607A.14.5***~~ ***Uncovered open-frame roof structures.*** *Uncovered open-frame roof structures shall be designed for a vertical live load of not less than 10 pounds per square foot (0.48 kN/m^2) of the total area encompassed by the framework.*

…

1607*A*.18 Seating for assembly uses. *Bleachers*, *folding and telescopic seating* and *grandstands* shall be designed for the *loads* specified in ICC 300 *(Relocated from existing Section 1607A.19) as modified by Section 1605A.3 load combinations*. Stadiums and arenas with *fixed seats* shall be designed for the horizontal sway *loads* in Section 1607.18.1.

…

SECTION 1610A -SOIL LOADS AND HYDROSTATIC PRESSURE

1610*A*.1 Lateral pressures. *Structures* below grade shall be designed to resist lateral soil *loads* from adjacent soil *in accordance with Sections 1807A.1.1 and 1807A.2.2 respectively*. ~~Soil *loads* specified in Table 1610.1 shall be used as the minimum design lateral soil *loads* unless determined otherwise by a geotechnical investigation in accordance with Section 1803.~~ Foundation walls and other walls in which horizontal movement is restricted at the top shall be designed for at-rest pressure. Walls that are free to move and rotate at the top, such as retaining walls, shall be permitted to be designed for active pressure.

Where applicable, lateral pressure from fixed or moving surcharge *loads* shall be added to the lateral soil *load*. Lateral pressure shall be increased if expansive soils are present at the *site*. Foundation walls shall be designed to support the weight of the full hydrostatic pressure of undrained backfill unless a drainage system is installed in accordance with Sections 1805.4.2 and 1805.4.3.

Exception: Foundation walls extending not more than 8 feet (2438 mm) below grade and laterally supported at the top by flexible *diaphragms* shall be permitted to be designed for active pressure.

…

SECTION 1613*A* - EARTHQUAKE LOADS

1613*A*.1 Scope. Every structure, and portion thereof, including nonstructural components that are permanently attached to *structures* and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with Chapters 11, 12, 13, 15, 17 and 18 of ASCE 7, as applicable. The *seismic design category* for a *structure* ~~*shall*~~ is permitted to be determined in accordance with Section 1613*A* or ASCE 7.

(Amendment to Exception in existing Section 1613A.1 is shown for clarity)

~~**Exceptions:**~~

1. ~~Detached one- and two-family *dwellings*, assigned to *Seismic Design Category* A, B or C.~~
2. ~~The *seismic force-resisting system* of wood-frame *buildings* that conform to the provisions of Section 2308 are not required to be analyzed as specified in this section.~~
3. ~~Agricultural storage *structures* intended only for incidental human occupancy.~~
4. ~~*Structures* that require special consideration of their response characteristics and environment that are not addressed by this code or ASCE 7 and for which other regulations provide seismic criteria, such as vehicular bridges, electrical transmission towers, hydraulic *structures*, buried utility lines and their appurtenances and nuclear reactors.~~
5. ~~References within ASCE 7 to Chapter 14 shall not apply, except as specifically required herein.~~
6. ~~*Temporary structures* complying with Section 3103.6.1.4.~~

1613A.2 Determination of seismic design category. *Structures* shall be assigned to a *seismic design category* *(Relocated from existing Section 1613A.2.5)* D or higher based on one of the following methods unless the authority having *jurisdiction* or geotechnical data determines that *Site Class* DE, E or F soils are present at the site:

1. Based on the structure *risk category* using Figures 1613.2(1) through 1613.2(7).
2. Determined in accordance with ASCE 7.

Where Site Class DE, E or F soils are present, the *seismic design category* shall be determined in accordance with ASCE 7.

(Relocated to Section 1613A.2) ~~***1613A.2.5***~~ … ~~Other structures shall be assigned to *Seismic Design Category D.*~~

~~**1613*A*.2.5.1 Alternative seismic design category determination.** *Not permitted by DSA-SS and OSHPD.*~~

1613*A*.3 ~~1613*A*.2.5.2~~ Simplified design procedure. *Not permitted by OSHPD.*

…

1613.4 Ballasted photovoltaic panel systems. Ballasted, roof-mounted *photovoltaic panel systems* need not be rigidly attached to the roof or supporting *structure*. Ballasted, unattached PV panel systems shall be designed and installed only on roofs with slopes not more than 1 unit vertical in 12 units horizontal. Ballasted, unattached *PV panel systems* shall be designed to accommodate sliding in accordance with ASCE 7 Chapter 13. *(Relocated from existing Section 1613A.3)* ***[OSHPD 1 & 4]*** *Ballasted photovoltaic panel systems shall be considered as an alternative system.*

…

[Delete existing amendments to deleted Tables 1613A.2.3(1) & 1613A.2.3(2)]
…

SECTION *1617A* - MODIFICATIONS TO ASCE 7

1617A.1 General. *The text of ASCE 7 shall be modified as indicated in Sections 1617A.1.1 through ~~1617A.1.40~~ 1617A.1.41.*

1617A.1.1 ASCE 7, Section 1.3. *Modify ASCE 7, Section 1.3 by adding Section 1.3.8 as follows:*

> ***1.3.8 Structural design criteria.*** *Where design is based on ASCE 7, Chapters 16, 17, ~~or~~ 18, or 31 the seismic ground motion, wind tunnel test based design recommendations, analysis and design methods, material assumptions, testing requirements and acceptance criteria ~~proposed by the engineer~~ shall be submitted to the enforcement agency as an alternative system. ~~in the form of structural design criteria for approval~~.*
>
> ***[OSHPD 1 & 4]*** *Peer review requirements in Section 1617A.1.41 of this code shall apply to design reviews required by ASCE 7, Chapters 17, ~~and~~ 18 and 31.*

…

> ***1617A.1. 3. Reserved. ~~ASCE 7, Section 11.4.~~*** *~~Modify ASCE 7, Section 11.4 to include the following:~~*
> *~~Seismic ground motion values shall include updated subsections in Supplement 3.~~* ***~~[OSHPD 1 & 4]~~*** *~~Use of the 2020 NEHRP Provisions for multi-period spectra shall be permitted, where all of the following are included.~~*

~~*1. A detailed seismic design criterion shall be submitted to and approved by the AHJ.*~~
~~*2. Seismic Ground Motion values shall be determined using the 2020 NEHRP Provisions, Section 11.4.*~~
~~*3. Geologic Hazard and Geotechnical Investigation shall be performed using the 2020 NEHRP Provisions, Section 11.8.*~~
~~*4. Vertical Ground Motions, where required, shall be determined using the 2020 NEHRP Provisions, Section 11.9.*~~
~~*5. Site Classification shall be determined using the 2020 NEHRP Provisions, Chapter 20.*~~
~~*6. Site-Specific Ground Motion Procedures shall be determined using the 2020 NEHRP Provisions, Chapter 21.*~~
~~*7. Seismic Ground Motion and Long-period Transition Maps shall be used from Chapter 22 of the 2020 NEHRP Provisions.*~~
~~*8. SDS and SD1 obtained from the multi-period spectra determined using the 2020 NEHRP Provisions shall be used, where required in Chapter 12, 13 and 15 of ASCE 7-16.*~~

1617A.1.4 ASCE 7, Table 12.2-1. *Modify ASCE 7, Table 12.2-1 as follows:*

A. BEARING WALL SYSTEMS
6. ~~5.~~ Intermediate Precast Shear Walls—*Not permitted by OSHPD.*
18. ~~17.~~ Light-framed walls with shear panels of all other materials—*Not permitted by OSHPD.*

B. BUILDING FRAME SYSTEMS
3. ~~Ordinary steel~~ Steel ordinary concentrically braced frames— *Not permitted by OSHPD.*
9. ~~8.~~ Intermediate Precast Shear Walls—*Not permitted by OSHPD.*
25. ~~24.~~ Light-framed walls with shear panels of all other materials—*Not permitted by OSHPD.*
27. ~~26.~~ Special steel plate shear wall—*Not permitted by OSHPD.*

C.MOMENT-RESISTING FRAME SYSTEMS
2. ~~Special steel~~ Steel special truss moment frames—*Not permitted by OSHPD.*
3. ~~Intermediate steel~~ Steel intermediate moment frames—*Not permitted by OSHPD.*
4. ~~Ordinary steel~~ Steel ordinary moment frames—*Not permitted by OSHPD.*
12. Cold-formed steel–special bolted moment frame—*Not permitted by OSHPD.*

G. CANTILEVER COLUMN SYSTEMS DETAILED TO CONFORM WITH THE REQUIREMENTS FOR:
1. Steel special cantilever column systems—*Not permitted by OSHPD except for single-story canopies and independent covered walkways where R, C_d and Ω_0 = 1.5 and roof dead load is less than 20 psf.*

3. Special reinforced concrete moment frames— *Not permitted by OSHPD.*

Exceptions:

1. Systems listed in this section can be used as an alternative system when preapproved by the enforcement agency.
2. Rooftop or other supported structures not exceeding two stories in height and 10 percent of the total structure weight can use the systems in this section when designed as components per ASCE 7, Chapter 13.
3. Systems listed in this section can be used for seismically isolated buildings, when permitted by ASCE 7, Section 17.2.5.4.

1617A.1.5 Reserved. ~~***ASCE 7, Section 12.2.3, 12.2.3.1 and 12.2.3.2.***~~
~~*Modify ASCE 7, Sections 12.2.3, 12.2.3.1 and 12.2.3.2 as follows:*~~
~~***1617A.1.5.1 ASCE 7, Section 12.2.3.*** *Replace ASCE 7, Section 12.2.3 with the following: Where different seismic force-resisting systems are used in combinations to resist seismic forces in the same direction, other than those combinations considered as dual systems, the design shall comply with the requirements of this section. The most stringent applicable structural system limitations contained in Table 12.2-1 shall apply, except as otherwise permitted by this section.*~~

~~***1617A.1.5.2 ASCE 7, Section 12.2.3.1.*** *Replace ASCE 7, Section 12.2.3.1, Items 1 and 2, by the following:*~~

~~*The value of the response modification coefficient, R, used for design at any story shall not exceed the lowest value of R that is used in the same direction at any story above that story. Likewise, the deflection amplification factor, Cd , and the system over strength factor, Ω0 , used for the design at any story shall not be less than the largest value of these factors that are used in the same direction at any story above that story.*~~

~~***1617A.1.5.3 ASCE 7, Section 12.2.3.2.*** *Modify ASCE 7, Section 12.2.3.2 by modifying Item a and adding Items f, g and h, as follows:*~~

~~a. The stiffness of the lower portion shall be at least 10 times the stiffness of the upper portion. *For purposes of determining this ratio, the base shear shall be computed and distributed vertically according to Section 12.8. Using these forces, the stiffness for each portion shall be computed as the ratio of the base shear for that portion to the elastic displacement, δxe , computed at the top of that portion, considering the portion fixed at its base. For the lower portion, the applied forces shall include the reactions from the upper portion, modified as required in Item d.*~~
~~*f. The structural height of the upper portion shall not exceed the height limits of Table 12.2-1 for the seismic force-resisting system used, where the height is measured from the base of the upper portion.* ***[OSHPD 1 & 4]*** *Not permitted by OSHPD.*~~

~~*g. Where Horizontal Irregularity Type 4 or Vertical Irregularity Type 4 exists at the transition from the upper to the lower portion, the reactions from the upper portion shall be amplified in accordance with Sections 12.3.3.3, 12.10.1.1 and 12.10.3.3 as applicable, in addition to amplification required by Item d.*~~
~~*h. Where design of vertical elements of the upper portion is governed by special seismic load combinations, the special loads shall be considered in the design of the lower portion.*~~

…

1617A.1.10 ASCE 7, Section 12.3.3.1. *Modify* ~~*first sentence of*~~ *ASCE 7, Section 12.3.3.1* ~~*and add exceptions*~~ *as follows:*

12.3.3.1 Prohibited ~~**horizontal and**~~ **vertical irregularities for Seismic Design Categories D through F.** Structures assigned to Seismic Design Category *D*, E or F ~~having horizontal structural irregularity Type 1b of Table 12.3-1 or~~ that have vertical structural irregularities Type 1b, ~~5a~~ *4a* or *4b* ~~5b~~ of Table 12.3-2 shall not be permitted.

Exceptions~~:~~ Structures assigned to Seismic Design Category *D,* E or F that have vertical irregularity Type 4a shall be permitted where the story lateral strength is not less than 80% of that in the story above.

~~*1. Structures with reinforced concrete or reinforced masonry shear wall systems and rigid or semi-rigid diaphragms, consisting of concrete slabs or concrete-filled metal deck having a span-to-depth ratio of 3 or less, having a horizontal structural irregularity Type 1b of Table 12.3-1 are permitted, provided that the maximum story drift in the direction of the irregularity, computed including the torsional amplification factor from Section 12.8.4.3, is less than 10 percent of the allowable story drift in ASCE 7, Table 12.12-1.*~~
~~*2. Structures having a horizontal structural irregularity Type 1b of Table 12.3-1 are permitted, provided a redundancy factor, ρ, of 1.3 as defined in ASCE 7 12.3.4 is assigned to the seismic force-resisting system in both orthogonal directions and the structure is designed for one of the orthogonal procedures as defined in ASCE 7, Section 12.5.3.1.*~~

1617A.1.11 ASCE 7, Section 12.7.2. *Modify ASCE 7, Section 12.7.2, by adding Item* ~~*6*~~ *7 to read as follows:*

7. ~~*6.*~~ *Where buildings provide lateral support for walls retaining earth, and the exterior grades on opposite sides of the building differ by more than 6 feet (1829 mm), the load combination of the seismic increment of earth pressure due to earthquake acting on the higher side, as determined by a geotechnical engineer qualified in soils engineering plus the difference in earth pressures shall be added to the lateral forces provided in this section.*

1617A.1.12 ~~Reserved.~~

1617A.1.13 ~~Reserved.~~ ASCE 7, Section 12.13.5.2. [OSHPD 1 & 4] *Modify ASCE 7, Section 12.13.5.2 by the following:*

Replace last sentence by the following: When vertical nominal strength (upward or downward) is determined by approved in-situ prototype testing program, resistance factor (ϕ) shall be permitted to be 0.75 (ϕ = 0.75).

1617A.1.14 Reserved. ~~1617A.1.14 ASCE 7, Section 12.12.3. [OSHPD 1 & 4]~~
~~Replace ASCE 7 Equation 12.12-1 by the following:~~

~~$\delta_M = C_d \delta_{max}$ (Equation 12.12-1)~~

…

1617A.1.16 ASCE 7, Section 12.13.9.2. *Modify ASCE 7, Section 12.13.9.2 by the following sentence added to the end of ~~Item b~~ the exception as follows:*

Seismic load effects determined in accordance with Section 12.4 need not be considered in this check.

…

1617A.1.17 ASCE 7, Section 13.1.3. [OSHPD 1 & 4] *Modify ASCE 7, Section 13.1.3 by the following:*

All nonstructural components shall have a component importance factor, I_p, equal to 1.5.

Exception: *Hospital buildings rated SPC-1 and SPC-2 not providing services/systems, utilities or access/egress to general acute care buildings designated as SPC 3 or higher in accordance with Chapter 6 of the California Administrative Code, shall be permitted to use component importance factor, I_p, as given in ASCE 7, Section ~~13.3.1~~ 13.1.3.*

1617A.1.18 ASCE 7, Section 13.1.4. *Replace ASCE 7, Section 13.1.4, with the following:*

13.1.4. Nonstructural Component Support and Attachment Requirements:
The following nonstructural components and equipment shall be anchored in accordance with this section. Design and detailing shall be in accordance with Chapter 13 except as modified by this section.

*1. **Fixed Equipment:** Equipment shall be anchored if it is directly attached to the building utility services such as electricity, gas, or water. For the purposes of this requirement, "directly attached" shall include all electrical connections except plugs for 110/220-volt receptacles having a flexible*

cable/cord. Equipment that is connected to the building plumbing system with a shut-off valve in proximity to the equipment shall not be considered as directly attached provided the inside diameter of the pipe/tubing is less than 1/2 inch (12.7 mm).

*2. **Movable Equipment:** Equipment is subject to the same requirement as fixed equipment, but is permitted to be anchored by re-attachable anchors or restraints in a manner approved by the enforcement agency. Utilities and services at the equipment shall have flexible connections to allow for necessary movement.*

*3. **[OSHPD 1, 2, 4 & 5] Mobile Equipment:** Equipment heavier than 400 pounds (181.4 kg) that has a center of mass located 4 feet (1219 mm) or more above the adjacent floor or roof level that directly support the equipment shall be restrained in a manner approved by the enforcement agency when stored and not in use, unless the equipment is stored in an equipment storage room.*

*4. **[OSHPD 1, 2, 4 & 5] Countertop Equipment:** Countertop equipment shall be subject to the same anchorage or restraint requirements for fixed, movable, mobile or other equipment, as applicable.*

*5. **[OSHPD 1, 2, 4 & 5] Temporary Equipment:** Equipment for uses greater than 30 days but less than or equal to 180 days and where this section requires supports and attachments, the following shall apply:*

a. Seismic design for supports and attachments for temporary equipment shall meet the requirements of Chapter 13; however, the calculated F_p may be reduced by 50 percent. It is acceptable to use ballasts for seismic bracing supports and attachments and to limit the design criteria to overturning unless directly or indirectly supported by the building structure.

b. Wind design speeds may be reduced as prescribed in ASCE 37-~~14~~ or other standard approved by OSHPD.

c. Temporary piping, conductors and ductwork shall be supported. Seismic design for supports and attachments of temporary piping, conductors and ductwork is not required.

*6. **[OSHPD 1, 2, 4 & 5] Interim Equipment:***

a. Seismic design for supports and attachments for interim equipment shall meet the requirements of Chapter 13 with the following modifications;

1) The calculated F_p used in the design may be reduced by 50 percent.

2) It is acceptable to use ballasts for seismic or wind bracing supports and attachments and limit the design to overturning only without the consideration of sliding, unless directly or indirectly supported by the building structure.

3) Anticipated duration of use must be specified.

b. Wind design speeds may be reduced as prescribed in ASCE 37-~~14~~ or other standard approved by OSHPD.

c. Piping, conductors and ductwork shall be supported. Seismic design for supports and attachments of piping, conductors and ductwork is not required.

*7. **Other Equipment:** Equipment shall be anchored where any of the following apply:*

*a. **[OSHPD 1, 2, 4 & 5]** Essential to hospital operations and weight of equipment is greater than 100 pounds (45 kg).*

*b. **[OSHPD 1, 2, 4 & 5]** Could fall within the patient care vicinity as defined in Article 517.2 of the California Electrical Code.*

*c. Could fall and block a required means of egress. **[OSHPD 1, 2, 4 & 5]** Weight of equipment is greater than 400 pounds (181.4 kg).*

*e. **[OSHPD 1, 2, 4 & 5]** Weight of equipment is greater than 200 pounds (90 kg) and center of mass located greater than 4 feet (1219 mm) measured from the finished floor.*

8. Equipment with hazardous contents.

9. Other architectural, mechanical and electrical components stated in Chapter 13.

*10. **Wall-, Roof- or Floor-Hung Equipment:** Seismic design and seismic details shall be provided for wall-, roof- or floor-hung nonstructural components and equipment when the component weighs more than 20 pounds (9 kg)<u>.</u> **[OSHPD 1, 2, 4 & 5]** or, in the case of a distributed system, more than 5 pounds per foot (73 N/m).*

[OSHPD 1, 2, 4 & 5] Exemptions:

1. Furniture except storage cabinets as noted in Table 13.5-1.

2. Nonstructural components and equipment, that are attached to the building, provided that the component weighs 20 pounds (9 kg) or less<u>.</u> or, in the case of a distributed system, 5 pounds per foot (73 N/m) or less. Seismic design and ~~seismic~~ details need not be provided.

3. Seismic design need not be provided for discrete architectural, mechanical and electrical components and equipment that are attached to the building and anchorage is detailed on the ~~plans~~ <u>construction documents</u>, provided that the component weighs 400 pounds (18.44 kg) or less, and the center of mass is located 4 feet (1219 mm) or less above the adjacent floor or roof level that directly support the component and flexible connections are provided between the component and associated ductwork, piping and conduit where required.

***1617A.1.19 ASCE 7, Section 13.4** Replace ASCE 7, Sections 13.4.2.3, with the following:*

13.4.2.3 Prequalified post-installed anchors and specialty inserts in concrete and masonry.

Post-installed anchors, <u>post-installed reinforcing bars,</u> and specialty inserts in concrete that are pre-qualified for seismic applications in

accordance with ACI 355.2, ACI 355.4, ICC-ES AC193, ICC-ES AC232, ICC-ES AC308 or ICC-ES AC446 shall be permitted. Post-installed anchors in masonry shall be pre-qualified for seismic applications in accordance with ICC-ES AC01, AC58 or AC106.

~~Use of screw anchors shall be limited to dry interior conditions and shall not be used in building enclosures. Re-use of screw anchors or screw anchor holes shall not be permitted.~~ ***OSHPD 1 & 4****] Screw anchors shall be permitted for use in building enclosures when permitted for exterior conditions in accordance with a valid evaluation report. Re-use of screw anchors or screw anchor holes shall not be permitted.*

…

1617A.1.21 ASCE 7, Section 13.5.6.2. *Modify ASCE 7, Section 13.5.6.2 by the following exception added to the end of Section 13.5.6.2.2 and by adding Section 13.5.6.2.3 as follows:*

Exception to Section 13.5.8.1 shall not be used in accordance with ASTM E580 Section 5.5.

13.5.6.2.3 Modification to ASTM E580. *Modify ASTM E580 by the following:*

1. ***Exitways.*** *Lay-in ceiling assemblies in exitways shall be installed with a main runner or cross runner surrounding all sides of each piece of tile, board or panel and each light fixture or grille. A cross runner that supports another cross runner shall be considered as a main runner for the purpose of structural classification. Splices or intersections of such runners shall be attached with through connectors such as pop rivets, screws, pins, plates with end tabs or other approved connectors. Lateral force diagonal bracing may be omitted in the short or transverse direction of exitways, not exceeding 8 feet wide, when perimeter support in accordance with ASTM E580 Sections 5.2.2 and 5.2.3 is provided and the perimeter wall laterally supporting the ceiling in the short or transverse direction is designed to carry the ceiling lateral forces. The connections between the ceiling grid, wall angle and*
the wall shall be designed to resist the ceiling lateral forces.
2. ***Corridors and lobbies.*** *Expansion joints shall be provided in the ceiling at intersections of corridors and at junctions of corridors and lobbies or other similar areas.*
3. ***Lay-in panels.*** *Metal panels and panels weighing more than 1/2 pounds per square foot (24 N/m^2) other than acoustical tiles shall be positively attached to the ceiling suspension runners.*
4. ***Lateral force bracing.*** *Lateral force bracing is required for all ceiling areas except that they shall be permitted to be omitted in rooms with floor areas up to 144 square feet when perimeter support in accordance with ASTM E580, Sections 5.2.2 and 5.2.3, are provided and perimeter walls are designed to carry*

the ceiling lateral forces. The connections between the ceiling grid, wall angle and the wall shall be designed to resist the ceiling lateral forces. Horizontal restraint point spacing shall be justified by analysis or test and shall not exceed a spacing of 12 feet by 12 feet. Bracing wires shall be secured with four tight twists in 1 1/2 inches, or an approved alternate connection.
5. Ceiling support and bracing wires shall be spaced a minimum of 6 inches from all pipes, ducts, conduits and equipment that are not braced for horizontal forces, unless approved otherwise by the building official.
***6. [OSHPD 1 & 4]** Acoustical tile or lay-in panel ceiling grids constructed of aluminum shall have the hanger spacing at 2'-0" on center each way and total ceiling weight of such systems, W_p, shall not exceed 2 psf.*

…

1617A.1.23 ASCE 7, Section 13.6.2.1 ~~and ASCE 7, Tables 13.5-1 and 13.6-1~~. *Modify Section 13.6.2.1 by adding the following to the end of the section:*

***[OSHPD 1 & 4]** Use of this section shall be considered as an alternative system. Alternatively, HVACR systems shall require special seismic certification in accordance with Section ~~1705A.13.3~~ 1705A.14.3.*

~~***ASCE 7, Tables 13.5-1 and 13.6-1.** Modify ASCE 7, Tables 13.5-1 & 13.6-1 by the following:~~

~~*Where Ip = 1.5, overstrength factor (Ω_0) need not exceed the values of R_p for design of anchorage to concrete.*~~

…

1617A.1.26 ASCE 7, Section 13.6.7.3. *Replace ASCE 7, Section 13.6.7.3 with the following:*

13.6.7.3 Additional Provisions for Piping and Tubing Systems.

A) Design for the seismic forces of Section 13.3 shall not be required for piping systems where flexible connections, expansion loops or other assemblies are provided to accommodate the relative displacement between component and piping, where the piping system is positively attached to the structure, and where any of the following conditions apply:

1. Trapeze assemblies are supported by 3/8-inch (10 mm) or 1/2-inch (13 mm) diameter rod hangers not exceeding 12 inches (305 mm) in length from the pipe support point to the connection at the supporting structure, and no single pipe exceeds the diameter limits set forth in item 2b below or 2 inches (50 mm) where I_p is greater than 1.0 and the total weight supported by any single trapeze is 100 pounds (445 N) or less; or

2. Piping ~~that has an Rp in Table 13.6-1 of 4.5 or greater~~ is supported by rod hangers and provisions are made to avoid impact with other structural or nonstructural components or to protect the piping in the event of such impact~~;~~, or pipes with Ip = 1.0 supported by individual rod hangers 3/8 inch (10 mm) or 1/2 inch (13 mm) in diameter, where each hanger in the pipe run is 12 inches (305 mm) or less in length from the pipe support point to the connection at the supporting structure~~;~~ and the total weight supported by any single hanger is 50 pounds (220 N) or less. In addition, the following limitations on the size of piping shall be observed:

a. In structures assigned to Seismic Design Category D, E or F where Ip is greater than 1.0, the nominal pipe size shall be 1 inch (25 mm) or less.

b. In structures assigned to Seismic Design ~~Categories~~ Category D, E or F where Ip = 1.0, the nominal pipe size shall be 3 inches (80 mm) or less.

3. Pneumatic tube systems supported with trapeze assemblies using 3/8 inch (10 mm) in diameter rod hangers not exceeding 12 inches (305 mm) in length from the tube support point to the connection at the supporting structure and the total weight supported by any single trapeze is 100 pounds (445 N) or less.

1. Pneumatic tube systems supported by individual rod hangers 3/8 inch (10 mm) or 1/2 inch (13 mm) in diameter, and each hanger in the run is 12 inches (305 mm) or less in length from the tube support point to the connection at the supporting structure, and the total weight supported by any single rod is 50 pounds (220 N) or less.

B) Flexible connections in piping required in Section 13.6.7.3 are not required where pipe is rigidly attached to the same floor or wall that provides vertical and lateral support for the equipment, or to a fixture.

C) Flexible connections in piping are required at seismic separation joints and shall be detailed to accommodate the seismic relative displacements at connections.

…

***1617A.1.39 Earthquake Motion Measuring Instrumentation and Post-earthquake Structural Monitoring/Verification. [OSHPD 1 & 4]** Modify ASCE 7 by the following:*

***Scope:** For buildings with a seismic isolation system, a damping system or a lateral force-resisting system (LFRS) not listed in ASCE 7, Table 12.2-1, earthquake motion measuring instrumentation and monitoring shall be required. For buildings with welded steel moment frames constructed under a permit*

issued prior to October 25, 1994 post-earthquake verification shall be in accordance with this section.

Instrumentation: *Earthquake monitoring instrumentation shall be installed in accordance with Section 104.2.3.8. ~~104.11.4.~~*

Monitoring: *After every significant seismic event, where the ground shaking acceleration at the site exceeds 0.3g or the acceleration at any monitored building level exceeds 0.8g as measured by the seismic monitoring system in the building, the owner shall retain a structural engineer to make an inspection of the structural system. The inspection shall include viewing the performance of the building, reviewing the strong motion records, and a visual examination of the isolators, dampers and connections for deterioration, offset or physical damage. A report for each inspection, including conclusions on the continuing adequacy of the structural system, shall be submitted to the enforcement agency.*

Verification: *After every seismic event that generates ground motions specified in the California Administrative Code, Chapter 6, Section 4.2.0.1 or the damage indicators specified in the California Administrative Code, Chapter 6, Section 4.2.0.2 at a welded steel moment frame building constructed under a permit issued prior to October 25, 1994, the owner shall retain a structural engineer to perform detailed joint evaluations required to meet the following requirements:*

1. A detailed joint evaluation program shall be submitted to the enforcement agency for approval prepared in accordance with the requirements of the California Administrative Code, Chapter 6, Section 4.2.0.3.

2. Upon approval of the joint evaluation program required by Item 1 above for the joint inspections, a project to perform the joint inspections, detailed in the program, shall be submitted and a building permit shall be obtained by the owner no later than 6 months from the date of occurrence of the seismic event.

Exception: *Where the ground motions at the building site are less than 0.4g, the permit shall be obtained no later than 12 months from the date of occurrence of the seismic event.*

3. A detailed joint evaluation report shall be submitted to the enforcement agency no later than 6 months of obtaining the building permit. The report shall document the findings from the inspections of the joints and include conclusions on the adequacy of the structural system. Where unsafe conditions are discovered, the provisions of Section 116 shall apply.

Where the detailed joint evaluation report is not submitted within the timeframes specified above, the building shall not be issued a building permit for any projects except for those for seismic compliance, maintenance and repair until the detailed joint evaluation work is complete.

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 17
SPECIAL INSPECTIONS AND TESTS

SECTION 1701 – GENERAL

1701.1 Scope. The provisions of this chapter shall govern the quality, workmanship and requirements for materials covered. Materials of construction and tests shall conform to the applicable standards listed in this code.

1701.1.1 Application. [OSHPD 1R, 2 & 5] *The scope of application of Chapter 17 is as follows:*

Structures regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD), which include hospital buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility ~~B~~ buildings and acute psychiatric hospital buildings, as listed in Sections 1.10.1, 1.10.2 and 1.10.5.

1701.1.2 Amendments in this chapter. [OSHPD 1R, 2 & 5] *OSHPD adopts this chapter as amended. ~~and all amendments~~.*

~~Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light-steel-frame construction as defined in Health and Safety Code Section 129725 need not comply with [OSHPD 2] amendments, except those in Sections 1701.1, 1703.4, 1704.2, 1705.3.3, 1705.5.3, 1705.13.3.1.~~

1701.1.3 Identification of amendments. [OSHPD 1R, 2 & 5] *Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD) amendments appear in this chapter preceded with the appropriate acronym, as follows:*
[OSHPD 1R] *– For applications listed in Section 1.10.1.*
[OSHPD 2] *– For applications listed in Section 1.10.2.*
[OSHPD 5] *– For applications listed in Section 1.10.5.*

…

SECTION 1704—SPECIAL INSPECTIONS AND TESTS, CONTRACTOR RESPONSIBILITY AND STRUCTURAL OBSERVATION

1704.1 General. *Special inspections* and tests, statements of *special inspections*, responsibilities of contractors, submittals to the *building official* and *structural observations* shall meet the applicable requirements of this section.

…

1704.3.2 Seismic requirements in the statement of special inspections. Where Section 1705.13 or 1705.14 specifies *special inspections* or tests for seismic resistance, the statement of *special inspections* shall identify the *designated seismic systems* and *seismic force-resisting systems* that are subject to the *special inspections* or tests.

[OSHPD 1R, 2 & 5] *Where Section 1705.13 ~~1705.12~~ or ~~1705.13~~ 1705.14 specifies special inspections or tests for seismic resistance, the statement of special inspections shall identify the equipment/components that require special seismic certification and seismic force-resisting systems that are subject to the special inspection or tests.*

…

SECTION 1705 - REQUIRED SPECIAL INSPECTIONS AND TESTS

1705.1 General. *Special inspections* and tests of elements and nonstructural components of *buildings* and *structures* shall meet the applicable requirements of this section.

…

1705.2 Steel construction. The *special inspections* and nondestructive testing of steel construction in *buildings*, *structures* and portions thereof shall be in accordance with this section.

> **Exception:** *Special inspections* of the steel fabrication process shall not be required where the fabrication process for the entire *building* or *structure* does not include any welding, thermal cutting or heating operation of any kind. In such cases, the fabricator shall be required to submit a detailed procedure for material control that demonstrates the fabricator's ability to maintain suitable records and procedures such that, at any time during the fabrication process, the material specification and grade for the main stress-carrying elements are capable of being determined. Mill test reports shall be identifiable to the main stress-carrying elements where required by the *approved construction documents*.

1705.2.1 Structural steel. *Special inspections* and nondestructive testing of *structural steel elements* in *buildings*, *structures* and portions thereof shall be in accordance with the quality assurance inspection requirements of AISC 360 ***[OSHPD 1R, 2 & 5]*** and this code.

Exception: *Special inspection* of railing systems composed of *structural steel elements* shall be limited to welding inspection of welds at the base of cantilevered rail posts.

[OSHPD 1R, 2 & 5] ~~*Special inspections and nondestructive testing of structural steel elements in buildings, structures and portions thereof shall be in accordance with the quality assurance inspection requirements of AISC 360, Chapter 22 and quality control requirements of AISC 360, AISC 341 and AISC 358.*~~

~~*AISC 360, Chapter N and AISC 341, Chapter J are adopted, except as noted below:*~~

The following provisions of AISC 360, Chapter N are not permitted by OSHPD. ~~*adopted:*~~

~~*1. N4, Item 2 (Quality Assurance Inspector Qualifications).*~~
~~*2. N5, Item 2 (Quality Assurance).*~~
1. ~~*3.*~~ *N5, Item 3. (Coordinated Inspection).*
~~*4. N5, Item 4 (Inspection of Welding).*~~
2. ~~*5.*~~ *N6 (Approved Fabricators and Erectors).*
~~*6. N7 (Nonconforming Material and Workmanship).*~~

User Note: [OSHPD 1R, 2 & 5] *Quality assurance requirements in AISC 360, AISC 341, AISC 358 and AISC 370 are equivalent to special inspection and testing requirements in this code and are provided by approved agencies employed by the Owner.*

1705.2.2 Structural stainless steel. Special inspections and nondestructive testing of structural stainless steel elements in *buildings* and portions thereof shall be in accordance with the quality assurance inspection requirements of AISC 370 ***[OSHPD 1R, 2 & 5]*** and this code.

[OSHPD 1R, 2 & 5] *The following provisions of AISC 370, Chapter N are not permitted by OSHPD.*

1. N5, Item 3. (Coordinated Inspection).
2. N6 (Approved Fabricators and Erectors).

1705.2.3 Cold-formed steel deck. *Special inspections* and qualification of welding *special inspectors* for cold-formed steel floor and *roof deck* shall be in accordance with the quality assurance inspection requirements of SDI QA/QC.

1705.2.4 Open-web steel joists and joist girders. *Special inspections* of open-web *steel joists* and joist girders in *buildings*, *structures* and portions thereof shall be in accordance with Table 1705.2.4.

1705.2.4.1 ~~***1705.2.3.1***~~ ***Steel joist and joist girder inspection. [OSHPD 1R, 2 & 5]*** *Special inspection is required during the manufacture and*

welding of steel joists or joist girders. The approved agency shall verify that proper quality control procedures and tests have been employed for all materials and the manufacturing process and shall perform visual inspection of the finished product. The approved agency shall place a distinguishing mark, and/or tag with this distinguishing mark, on each inspected joist or joist girder. This mark or tag shall remain on the joist or joist girder throughout the job site receiving and erection process.

…

1705.2.5 Cold-formed steel trusses spanning 60 feet or greater. Where a cold-formed steel truss clear span is 60 feet (18 288 mm) or greater, the *special inspector* shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the *approved* truss submittal package.

1705.2.5.1 ~~1705.2.4.1~~ Light-framed steel truss inspection and testing. [OSHPD 1R, 2 & 5] *Regardless of truss span, the manufacture of cold-formed light-framed steel trusses shall be continuously inspected by an approved agency. The approved agency shall verify conformance of materials and manufacture with approved construction documents ~~plans and specifications~~. The approved agency shall place a distinguishing mark, and/or tag with this distinguishing mark, on each inspected truss. This mark or tag shall remain on the truss throughout the job site receiving and erection process. ~~Refer to Section 2211.1.3.3 for requirements applicable to manufactured trusses specified therein.~~*

1705.2.6 Metal building systems. Special inspections of *metal building systems* shall be performed in accordance with Sections 1705.2.1, 1705.2.3, 1705.2.4 and 1705.2.5 and Table 1705.2.6. The approved agency shall perform inspections of the erected *metal building system* to verify compliance with the *approved construction documents*.

…

1705.2.7 ~~1705.2.5~~ Inspection and tests of structural welding. [OSHPD 1R, 2, ~~&~~ 5 & 6] *Inspection and testing (including nondestructive testing) of all shop and field welding operations shall be in accordance with this section and Sections 1705.2.1, 1705.13.1, and 1705.14.1, as applicable. Inspections shall be ~~made~~ performed by an approved ~~qualified~~ welding inspector ~~approved by the enforcement agency~~. The minimum requirements for a qualified welding inspector shall be as those for an AWS Certified Welding Inspector (CWI), as defined in the provisions of the AWS QC1 or AWS B5.1.*

The welding inspector shall make a systematic daily record of all welds. This record shall include:
1. Identification marks of welders.
2. List of defective welds.

3. Manner of correction of defects.

The welding inspector shall check the material, details of construction and procedure, as well as workmanship of the welds. The inspector shall verify that the installation of end-welded stud shear connectors ~~is~~ are in accordance with the requirements of Section ~~2213.2~~ 2215.2 and the approved construction documents. ~~plans and specifications.~~ The approved agency shall furnish the architect, structural engineer and the enforcement agency with a verified report that the welding has been done in conformance with the applicable AWS reference D1.1, D1.3, D1.4, D1.6, D1.8, and the approved construction documents.

1705.2.8 ~~1705.2.6~~ Special inspection and tests of high-strength fastener assemblies. [OSHPD 1R, 2 & 5] *Special inspections and tests for high-strength fasteners shall be in accordance with this section and Section ~~2213.1~~ 2215.1.*

1705.3 Concrete construction. *Special inspections* and tests of concrete construction shall be performed in accordance with this section and Table 1705.3.

…

1705.3.3 Batch plant inspection. [OSHPD 1R, 2, & 5] *Except as provided under this section, the quality and quantity of materials used in transit-mixed concrete and in batched aggregates shall be continuously inspected by an approved agency at the location where materials are measured.*

> ***1705.3.3.1 Waiver of continuous batch plant inspection. ~~[OSHPD 1R, 2, & 5]~~*** *Continuous batch plant inspection ~~may~~ shall be permitted to be waived by the registered design professional, subject to approval by the enforcement agency under either of the following conditions:*
>
> *1. The concrete plant complies fully with the requirements of ASTM C94, Sections 9 and 10, and has a current certificate from the National Ready Mixed Concrete Association or another agency acceptable to the enforcement agency. The certification shall indicate that the plant has automatic batching and recording capabilities.*
>
> *2. For single-story light-framed construction (without basement or retaining walls higher than 6 feet in height measured from bottom of footing to top of wall) and isolated foundations supporting equipment only, where deep foundation elements are not used.*
>
> *When continuous batch plant inspection is waived, the following requirements shall apply and shall be described in the construction documents:*
>
> *1. An approved agency shall check the first batch at the start of the day to verify materials and proportions conform to the approved mix design.*
>
> *2. A licensed weighmaster shall positively identify quantity of materials and certify each load by a batch ticket.*

3. Batch tickets, including material quantities and weights, shall accompany the load, shall be transmitted to the inspector of record by the truck driver with load identified thereon. The load shall not be placed without a batch ticket identifying the mix. The inspector of record shall keep a daily record of placements, identifying each truck, its load, time of receipt at the job site and approximate location of deposit in the structure and shall maintain a copy of the daily record as required by the enforcement agency.

1705.3.4 Inspection and testing of prestressed concrete. [OSHPD 1R, 2 & 5]
Inspections and tests for prestressed concrete work shall be in accordance with this section.

Tests for prestressing steel and anchorage shall be ~~per~~ in accordance with Section 1910A.3. Inspection shall be in accordance with the following:

1. In addition to the general inspection required for concrete work, all plant fabrication of prestressed concrete members or tensioning of post-tensioned members constructed at the site shall be continuously inspected by an approved special inspector. ~~specially approved for this purpose by the enforcement agency.~~

***Exception:** The special inspector need not be continuously present for the placement of prestress or post-tensioned cables or tendons.*

2. The prestressed concrete plant fabrication special inspector shall check the materials, equipment, tensioning procedure and construction of the prestressed members and prepare daily written reports. The approved agency shall make a verified report identifying the members by mark and shall include such pertinent data as lot numbers of tendons used, tendon jacking forces, age and strength of concrete at time of tendon release and such other information that may be required.

3. The special inspector of prestressed members post-tensioned at the site shall check the condition of the prestressing tendons, anchorage assemblies and concrete in the area of the anchorage, the tensioning equipment and the tensioning procedure and prepare daily written reports. The approved agency shall make a verified report of the prestressing operation identifying the members or tendons by mark and including such pertinent data as the initial cable slack, net elongation of tendons, jacking force developed and such other information as may be required.

4. The verified reports of construction shall show that of the special inspector's own personal knowledge, the work covered by the report has been performed and materials used and installed in every material respect in compliance with the duly approved construction documents ~~plans and specifications~~ for plant fabrication inspection. The verified report shall be accompanied by test reports required for materials used. For site post-tensioning special inspections, the verified report shall be accompanied by copies of calibration charts, certified by an approved testing laboratory, showing the relationship between gage readings and force applied by the jacks used in the prestressing procedure.

1705.3.9 Shotcrete. [OSHPD 1R, 2, & 5] *All shotcrete work shall be continuously inspected during placing by an approved agency. The ~~special~~ shotcrete special inspector shall check the materials, placing equipment, details of construction and construction procedure. The approved agency shall furnish a verified report that of his or her own personal knowledge the work covered by the report has been performed and materials have been used and installed in every material respect in compliance with the duly approved construction documents ~~plans and specifications~~. ~~Preconstruction and strength tests of shotcrete shall be in accordance with Sections 1908.5 and 1908.10, respectively.~~*

1705.3.9.1 Visual examination for structural soundness of in-place shotcrete. *Completed shotcrete work shall be checked visually for reinforcing bar embedment, voids, rock pockets, sand streaks and similar deficiencies by examining a minimum of three 3-inch (76 mm) cores taken from three areas chosen by the design engineer which represent the worst congestion of reinforcing bars occurring in the project. Extra reinforcing bars may be added to noncongested areas and cores may be taken from these areas. The cores shall be examined by the special inspector and a report submitted to the enforcement agency prior to final approval of the shotcrete.*

Exception: *Shotcrete work fully supported on earth, minor repairs, and when, in the opinion of the enforcement agency, no special hazard exists.*

1705.3.9.2 Preconstruction tests. *A shotcrete mockup panel shall be shot, cured, cored or sawn, examined and tested prior to commencement of the project. The mockup panel shall be representative of the project and simulate job conditions as closely as possible. The mockup panel thickness and reinforcing shall reproduce the thickest and most congested area specified in the structural design. It shall be shot at the same angle, using the same nozzleman and with the same concrete mix design that will be used on the project. Adequate encasement of bars larger than No. 5 shall be demonstrated by the mockup panels. The equipment used in preconstruction testing shall be the same equipment used in the work requiring such testing, unless substitute equipment is approved by the building official. Reports of preconstruction tests shall be submitted to the building official as specified in Section 1704.5.*

…

1705.4 Masonry construction. *Special inspections* and tests of *masonry* construction shall be performed in accordance with the quality assurance program requirements of TMS 402 and TMS 602 ***[OSHPD 1R, 2 & 5]*** *as set forth in Tables 3 and 4, Level 3 requirements and Chapter 21. Testing shall be performed in accordance with Section 2105. Special inspection and testing of post-installed anchors in masonry shall be required in accordance with requirements for concrete in Chapters 17 and 19*.

Exception: ***[OSHPD 1R, 2 & 5]*** *Not permitted by OSHPD. Special inspections* and tests shall not be required for:

1. Glass unit *masonry* or *masonry veneer* designed in accordance with Section 2110 or Chapter 14, respectively, where they are part of a *structure* classified as *Risk Category* I, II or III.
2. *Masonry* foundation walls constructed in accordance with Table 1807.1.6.3(1), 1807.1.6.3(2), 1807.1.6.3(3) or 1807.1.6.3(4).
3. Masonry fireplaces, masonry heaters or masonry chimneys installed or constructed in accordance with Section 2111, 2112 or 2113, respectively.

1705.4.1 Glass unit masonry and masonry veneer in Risk Category IV. *Special inspections* and tests for glass unit *masonry* or *masonry veneer* designed in accordance with Section 2110 or Chapter 14, respectively, where they are part of a *structure* classified as *Risk Category* IV shall be performed in accordance with TMS 602 Level 2.

[OSHPD 1R, 2 & 5] *Not permitted by OSHPD.*

*[**OSHPD 1R, 2 & 5**]* ***Glass unit masonry and masonry veneer in Risk Category II, III or IV.*** *Special inspections and tests for glass unit masonry or masonry veneer designed by Section 2110 or Chapter 14, respectively, in structures classified as Risk Category II, III or IV, shall be performed in accordance with TMS 602 Tables 3 and 4, Level 2 Quality Assurance.*

TMS 602 Table 4 footnote d is not permitted, periodic special inspection shall be performed for all adhered veneer.

…

1705.13.1 Structural steel. *Special inspections* for seismic resistance shall be in accordance with Section 1705.13.1.1 or 1705.13.1.2, as applicable.

1705.13.1.1 Seismic force-resisting systems. *Special inspections* of structural steel in the *seismic force-resisting systems* in *buildings* and *structures* assigned to *Seismic Design Category* B, C, D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341 ***[OSHPD 1R, 2 & 5]*** and this code.

Exceptions:

1. In *buildings* and *structures* assigned to *Seismic Design Category* B or C, *special inspections* are not required for structural steel *seismic force-resisting systems* where the response modification coefficient, *R*, designated for “Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems” in ASCE 7, Table 12.2-1, has been used for design and detailing.
2. In structures assigned to *Seismic Design Category* D, E, or F, *special inspections* are not required for structural steel *seismic force-resisting systems* where design and detailing in accordance with AISC 360 is permitted by ASCE 7, Table 15.4-1.

1705.13.1.2 Structural steel elements. *Special inspections* of *structural steel elements* in the *seismic force-resisting systems* of *buildings* and *structures* assigned to *Seismic Design Category* B, C, D, E or F other than those covered in Section 1705.13.1.1, including struts, *collectors*, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341 ***[OSHPD 1R, 2 & 5]*** and this code.

Exceptions:

1. In *buildings* and *structures* assigned to *Seismic Design Category* B or C, *special inspections* of *structural steel elements* are not required for *seismic force-resisting systems* with a response modification coefficient, *R*, of 3 or less.
2. In *structures* assigned to *Seismic Design Category* D, E, or F, *special inspections* of *structural steel elements* are not required for *seismic force-resisting systems* where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1. *Special inspection* shall be in accordance with the applicable referenced standard listed in ASCE 7, Table 15.4-1.

…

1705.14 Testing for seismic resistance. Testing for seismic resistance shall be required as specified in Sections 1705.14.1 through 1705.14.4, unless exempted from *special inspections* by the exceptions of Section 1704.2.

1705.14.1 Structural steel. Nondestructive testing for seismic resistance shall be in accordance with Section 1705.14.1.1 or 1705.14.1.2, as applicable.

1705.14.1.1 Seismic force-resisting systems. Nondestructive testing of structural steel in the seismic force-resisting systems in buildings and structures assigned to Seismic Design Category B, C, D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341 ***[OSHPD 1R, 2 & 5]*** *and this code*.

Exceptions: ***[OSHPD 1R, 2 & 5]*** *Not permitted by OSHPD.*

1. In buildings and structures assigned to Seismic Design Category B or C, nondestructive testing is not required for structural steel seismic force-resisting systems where the response modification coefficient, R, designated for “Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems” in ASCE 7, Table 12.2-1, has been used for design and detailing.
2. In structures assigned to Seismic Design Category D, E, or F, nondestructive testing is not required for structural steel seismic force-resisting systems where design and detailing in accordance with AISC 360 is permitted by ASCE 7, Table 15.4-1.

1705.14.1.2 Structural steel elements. Nondestructive testing of structural steel elements in the seismic force-resisting systems of buildings and structures assigned to

Seismic Design Category B, C, D, E or F other than those covered in Section 1705.14.1.1, including struts, collectors, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341 ***[OSHPD 1R, 2 & 5]*** *and this code*.

Exceptions: ***[OSHPD 1R, 2 & 5]*** *Not permitted by OSHPD.*

1. In buildings and structures assigned to Seismic Design Category B or C, nondestructive testing of structural steel elements is not required for seismic force-resisting systems with a response modification coefficient, R, of 3 or less.
2. In structures assigned to Seismic Design Category D, E or F, nondestructive testing of structural steel elements is not required for seismic force-resisting systems where design and detailing other than AISC 341 is permitted by ASCE 7, Table 15.4-1. Nondestructive testing of structural steel elements shall be in accordance with the applicable referenced standard listed in ASCE 7, Table 15.4-1

1705.14.2 Nonstructural components. For *structures* assigned to *Seismic Design Category* B, C, D, E or F, where the requirements of Section 13.2.1 of ASCE 7 for nonstructural components, supports or attachments are met by seismic qualification as specified in Item 2 therein, the *registered design professional* shall specify on the *approved construction documents* the requirements for seismic qualification by analysis, testing or experience data. *Certificates of compliance* for the seismic qualification shall be submitted to the *building official* as specified in Section 1704.5.

[OSHPD 1R, 2 & 5] *Seismic sway bracing components satisfying requirements of ANSI/FM 1950, ~~or~~ ANSI/ASHRAE 171 or using an alternative testing protocol approved by the building official shall be deemed to satisfy the requirements of this section.*

…

SECTION 1710 - OFF-SITE CONSTRUCTION
[OSHPD 1R, 2 & 5]

1710.1 General. *This section applies to off-site construction and shall govern the requirements for planning, design, fabrication, assembly, inspection and regulatory compliance.*

1710.2 Construction. *In addition to other applicable requirements in this code, off-site construction shall be constructed in accordance with ICC 1200, with the texts modified by Sections 1710.2.1 through 1710.2.2.*

1710.2.1 ICC 1200 Section 301.4. *Replace ICC 1200 Section 301.4 as follows:*

301.4 Use of shipping containers repurposed as buildings and building components. *Use of shipping containers repurposed as buildings and building components is not permitted by the California Building Code (CBC) Section 3115.*

1710.2.2 ICC 1200 Section 503.1. *Modify ICC 1200 Section 503.1 by adding the following:*
QA/QC shall satisfy all the requirements for Testing, Inspection, and Observation (TIO) in the California Building Standards Code (CBSC).

1710.3 Regulatory Compliance. *In addition to other applicable requirements in this code, off-site construction shall be inspected and regulated in accordance with ICC 1205, with texts modified by Sections 1710.3.1 through 1710.3.2.*

1710.3.1 ICC 1205 Section 302.1. *Modify ICC 1205 Section 302.1 by adding the following:*
Construction documents for plan approval shall satisfy all the requirements in the California Building Standards Code (CBSC).

1710.3.2 ICC 1205 Section 501.1. *Modify ICC 1205 Section 501.1 by adding the following:*
Testing, Inspection, and Observation (TIO) program shall satisfy all the requirements in the California Building Standards Code (CBSC).

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 17*A*
SPECIAL INSPECTIONS AND TESTS

SECTION 1701*A* - GENERAL

1701*A*.1 Scope. The provisions of this chapter shall govern the quality, workmanship and requirements for materials covered. Materials of construction and tests shall conform to the applicable standards listed in this code.

1701A.1.1 Application. *The scope of application of Chapter 17A is as follows:*

1. *Reserved for DSA-SS.*

2. Structures regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD), which include those applications listed in Sections 1.10.1 and 1.10.4. These applications include hospitals and correctional treatment centers.

1701A.1.2 Amendments in this chapter. *OSHPD adopt this chapter and all amendments.*

Exceptions: *Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:*

1. *Reserved for DSA-SS.*
2. *Office of Statewide ~~Health~~ Hospital Planning and Development:*
   [OSHPD 1] *– For applications listed in Section 1.10.1.*
   [OSHPD 4] *– For applications listed in Section 1.10.4.*

1701A.2 *Reserved for DSA-SS.*

1701A.3 Special inspections and tests. [OSHPD 1 & ~~and~~ 4] *In addition to the inspector(s) of record required by the California Administrative Code (CCR, Title 24, Part 1), Section 7-144, the owner shall employ one or more approved agencies to provide special inspections and tests during construction on the types of work listed under Chapters 14, 15, 17A, 18A, 19A, 20, 21A, 22A, 23, 24 and 25, and noted in the Test, Inspection and Observation (TIO) program required by Sections 7-141, 7-145 and 7-149, of the California Administrative Code. Test, Inspection and Observation (TIO) program shall satisfy requirements of Section 1704A.*

…

SECTION 1704*A* - SPECIAL INSPECTIONS AND TESTS, CONTRACTOR RESPONSIBILITY AND STRUCTURAL OBSERVATION

1704*A*.1 General. *Special inspections* and tests, statements of *special inspections*, responsibilities of contractors, submittals to the *building official* and *structural observations* shall meet the applicable requirements of this section.

…

1704*A*.2.4 Report requirement. *The inspector(s) of record and approved agencies* shall keep records of *special inspections* and tests. *The inspector(s) of record and approved agency* shall submit reports of *special inspections* and tests to the *building official* and to the *registered design professional in responsible charge* at frequencies required by the approved *construction documents* or *building official* *as required by the California Administrative Code*. All reports shall describe the nature and extent of inspections and tests, the location where the inspections and tests were performed, and indicate that work inspected or tested was or was not completed in conformance to

approved construction documents ~~*as required by the California Administrative Code and this code*~~. Discrepancies shall be brought to the immediate attention of the contractor for correction. If they are not corrected, the discrepancies shall be brought to the attention of the *building official* and to the *registered design professional in responsible charge* prior to the completion of that phase of the work. A final report documenting required *special inspections* and tests, and correction of any discrepancies noted in the inspections or tests, shall be submitted at a point in time agreed upon prior to the start of work by the *owner* or the *owner's* authorized agent to the *building official*.

…

SECTION 1705A - REQUIRED SPECIAL INSPECTIONS AND TESTS

1705A.1 General. *Special inspections* and tests of elements and nonstructural components of *buildings* and *structures* shall meet the applicable requirements of this section.

…

1705*A*.2.1 Structural steel. *Special inspections* and nondestructive testing of *structural steel elements* in *buildings*, *structures* and portions thereof shall be in accordance with the quality assurance inspection requirements of AISC 360 ***[OSHPD 1 & 4]*** and this code. ~~*.this section, Chapter 22A, and quality control requirements of AISC 360,*~~ , ~~*Chapter 22A, and quality control requirements of AISC 360, AISC 341 and AISC 358. AISC 360, Chapter N and AISC 341, Chapter J are adopted, except as noted below:*~~

[OSHPD 1 & 4] *The following provisions of AISC 360, Chapter N are not* ~~*adopted*~~ *permitted by OSHPD:*
~~*1. N4, Item 2 (Quality Assurance Inspector Qualifications).*~~
~~*2. N5, Item 2 (Quality Assurance).*~~
1. ~~*3.*~~ *N5, Item 3 (Coordinated Inspection).*
~~*4. N5, Item 4 (Inspection of Welding).*~~
2. ~~*5.*~~ *N6 (Approved Fabricators and Erectors).*
~~*6. N7 (Nonconforming Material and Workmanship).*~~

~~*Additionally, the requirements of Table 1705A.2.1 of the California Building Code shall apply. In addition to the quality assurance requirements contained in AISC 341, Chapter J, Section J5 (Inspection Tasks), the requirements of Section 1704A.3 and Table 1705A.2.1 of the California Building Code shall apply.*~~

[Delete Table 1705A.2.1 in its entirety]

User Note: [OSHPD 1 & 4] *Quality assurance requirements in AISC 360, AISC 341, AISC 358 and AISC 370 are equivalent to special inspection and testing requirements in this code and are provided by approved agencies employed by the Owner.*

Exception: Special inspection of railing systems composed of structural steel elements shall be limited to welding inspection of welds at the base of cantilevered rail posts.

1705*A*.2.2 Structural stainless steel. Special inspections and nondestructive testing of structural stainless steel elements in *buildings* and portions thereof shall be in accordance with the quality assurance inspection requirements of AISC 370 ***[OSHPD 1 & 4]*** and this code.

[OSHPD 1 & 4] *The following provisions of AISC 370, Chapter N are not permitted by OSHPD:*
1. N5, Item 3 (Coordinated Inspection).
2. N6 (Approved Fabricators and Erectors).

1705*A*.2.3 Cold-formed steel deck. *Special inspections* and qualification of welding *special inspectors* for cold-formed steel floor and *roof deck* shall be in accordance with the quality assurance inspection requirements of SDI QA/QC.

~~*Deck weld special inspection and testing shall also satisfy requirements in Table 1705A.2.1 and Section 1705A.2.5.*~~
…
1705*A*.2.4 Open-web steel joists and joist girders. *Special inspections* of open-web *steel joists* and joist girders in *buildings*, *structures* and portions thereof shall be in accordance with Table 1705*A*.2.4.

1705A.2.4.1 ~~***1705A.2.3.1***~~ ***Steel joist and joist girder inspection.*** *Special inspection is required during the manufacture and welding of steel joists or joist girders. The approved agency shall verify that proper quality control procedures and tests have been employed for all materials and the manufacturing process~~,~~ and shall perform visual inspection of the finished product. The approved agency shall place a distinguishing mark, and/or tag with this distinguishing mark, on each inspected joist or joist girder. This mark or tag shall remain on the joist or joist girder throughout the job site receiving and erection process.*

…

1705A.2.5 Cold-formed steel trusses spanning 60 feet or greater. Where a cold-formed steel truss clear span is 60 feet (18 288 mm) or greater, the *special inspector* shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the *approved* truss submittal package.

1705A.2.5.1 ~~***1705A.2.4.1***~~ ***Light-framed steel truss inspection and testing.*** *Regardless of truss span, the manufacture of cold-formed light framed steel trusses shall be continuously inspected by an approved agency. The approved agency shall verify conformance of materials and manufacture with approved plans and specifications. The approved agency shall place a distinguishing mark, and/or tag with this distinguishing mark, on each inspected truss. This mark or tag shall remain on the truss throughout the job site receiving and erection process. Refer to Section 2206A.1.3.3 ~~2211A.1.3.3~~ for requirements applicable to manufactured trusses specified therein.*

…

1705A.2.7 ~~***1705A.2.5***~~ ***Inspection and tests of structural welding.*** *Inspection and testing (including nondestructive testing) of all shop and field welding operations shall be in accordance with this section, and Sections 1705A.2.1,1705A.13.1, and 1705A.14.1, as applicable. ~~Table 1705A.2.1.~~ Inspections shall be ~~made~~ performed by an approved ~~qualified~~ welding inspector ~~approved by the enforcement agency~~. The minimum requirements for a qualified welding inspector shall be as those for an AWS certified welding inspector (CWI), as defined in the provisions of the AWS QC1 or AWS B5.1.*

The welding inspector shall make a systematic daily record of all welds. In addition to other required records, this record shall include:

1. *Identification marks of welders.*
2. *List of defective welds.*
3. *Manner of correction of defects.*

The welding inspector shall check the material, details of construction and procedure, as well as workmanship of the welds. The inspector shall verify that the installation and testing of end-welded stud shear connectors is in accordance with the requirements of Section ~~2213A.2~~ 2216A.2 and the approved construction documents. ~~plans and specifications.~~ The approved agency shall furnish the architect, structural engineer and the enforcement agency with a verified report that the welding has been done in conformance with the applicable AWS reference D1.1, D1.3, D1.4, D1.6, D1.8 and the approved construction documents.

1705A.2.8 ~~***1705A.2.6***~~ ***Special inspection and tests of high-strength fastener assemblies.*** *Special inspections and tests for high-strength fasteners shall be in accordance with this section~~,~~ and Section 1705A.2.1. ~~and Table 1705A.2.1.~~ High strength bolts, nuts and washers shall be sampled and tested by an approved agency for conformance with the requirements of applicable ASTM standards* ***[OSHPD 1 & 4]*** *and in accordance with Section ~~2213A.1~~ 2216A.1.*

…

TABLE 1705*A*.3 - REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION

[Table is updated to match with new IBC format. No material change intended]

	TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD[a]	CBC REFERENCE
1.	Inspect *and test* reinforcement, including prestressing tendons, and verify placement: ~~.~~			*ACI 318: 26.13.3.1*	*1705A.3.9, 1908A.1, ~~1910A.2, 1910A.3~~*
	a. Reinforcement in special moment frames, boundary elements of special structural walls and coupling beams.	*x*	-	ACI 318: Ch. 20, 25.2, 25.3, *25.5.1, 26.13.3.2,* 26.6.1-26.6.3	
	b. All other reinforcement.	-	x	ACI 318: Ch. 20, 25.2, 25.3, 26.6.1-26.6.3 *26.13.1, 26.13.3.3*	
2.	Reinforcing bar welding:			*ACI 318: 26.13.3*	*1705A.3.1, 1903A.8*
	a. Verify weldability of reinforcing bars other than ASTM A706.	-	*x*	AWS D1.4 ACI 318: 26.13.1.4	
	b. Inspect welding of reinforcement for special moment frames, boundary elements of special structural walls and coupling beams.	x	-	AWS D1.4 ACI 318: *18.2.8, 25.5.7,* 26.13.3	
	c. Inspect welded reinforcement splices.	x	-	-	
	d. Inspect welding of primary tension reinforcement in corbels.	x	-	-	
	e. Inspect single-pass fillet welds, maximum 5/16″ *not defined in 2.b.* ~~*2.d or 2.e.*~~		*x*	AWS D1.4 ACI 318: 26.13.3	
	f. Inspect all other welds.	-	*x*	AWS D1.4 ACI 318: 26.13.3, *26.13.1.4,*	

				26.13.3.2, 26.13.3.3	
	~~*e. Shear reinforcement.*~~	~~*x*~~	~~-~~		
3.	Inspect anchors cast in concrete.	-	*x*	ACI 318: *26.7.2, 26.8.2, 26.13.1,* 26.13.3.3	-
4.	Inspect *and test* anchors post-installed in hardened concrete members:[b, c]				*1705A.3.8, 1910A.5*
	a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.	X	-	ACI 318: 26.13.3.2, *26.7.2, 26.13.1, 26.13.3.2*	
	b. Mechanical anchors and adhesive anchors not defined in 4.a.	-	X	ACI 318: 26.13.3, *26.7.2, 26.13.1, 26.13.3*	
5.	Verify use of required design mix.	-	*x*	ACI 318: Ch. 19, 26.4, *26.13.3.2*	*1903A.4* ~~*1903A.5, 1903A.6, 1903A.7,*~~ 1904*A*.1, ~~*1904.21,*~~ *910A.1*
6.	Prior *and during* to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	-	ASTM C31 ASTM C172 ACI 318: *26.4,* 26.5, 26.12	*1705A.3.5, 1705A.3.6, 1705A.3.9,* ~~*1905A.1.17*~~ *1905A.20*
7.	Inspect concrete and shotcrete placement for proper application techniques.	X	-	ACI 318: 26.5, *26.13, ACI 506: 3.4*	*1705A.3.9,* ~~*1905A.1.15, 1905A.1.16*~~ *1905A.17 1905A.18*
8.	Verify maintenance of specified curing temperature and techniques.	-	x	ACI 318: 26.5.3-26.5.5, *26.13.3.3*	-
9.	Inspect prestressed concrete for:				*1705A.3.4*
	a. Application of prestressing forces.	x	-	ACI 318: 26.10.2,	

	b. Grouting of bonded prestressing tendons.	x	-	*26.13.1, 26.13.3.2*	
10.	Inspect erection of precast concrete members.	-	X	ACI 318: 26.9.2, *26.13.1, 26.13.3.3*	-
11.	For precast concrete diaphragm connections or reinforcement at joints classified as moderate or high deformability elements (MDE or HDE) in structures assigned to Seismic Design Category ~~C,~~ D, E or F, inspect such connections and reinforcement in the field for:			ACI 318: 26.13.1.3 ACI 550.5	-
	a. Installation of the embedded parts.	x	-		
	b. Completion of the continuity of reinforcement across joints.	x	-		
	c. Completion of connections in the field.	x	-		
12.	Inspect installation tolerances of precast concrete diaphragm connections for compliance with ACI 550.5.	-	x	ACI 318: 26.13.1.3	-
13.	Verify in-situ concrete strength, prior to stressing of tendons in posttensioned concrete and prior to removal of shores and forms from beams and structural slabs.	-	x	ACI 318: 26.10.2, 26.11.2, *26.13.3.3*	-
14.	Inspect formwork for shape, location and dimensions of the concrete member being formed.	-	x	~~ACI 318: 26.11.1.2(b), *26.13.3.3*~~	*1905A.19* ~~*1908A.3*~~

For SI: 1 inch = 25.4 mm.
a. Where applicable, see Section 1705.13.
b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 26.13 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.
c. Installation of all adhesive anchors in horizontal and upwardly inclined positions shall be performed by an ACI/CRSI Certified Adhesive Anchor Installer,
except where the design tension on the anchors is less than 100 pounds and those anchors are clearly noted on the approved construction documents or where the anchors are shear dowels across cold joints in slabs on grade where the slab is not part of the lateral force-resisting system.

…

1705A.3.3 Batch plant inspection. *Except as provided under this section, the quality and quantity of materials used in transit-mixed concrete and in batched aggregates shall be continuously inspected by an approved agency at the location where materials are measured.*

1705A.3.3.1 Waiver of continuous batch plant inspection. *Continuous batch plant inspection may be waived by the registered design professional, subject to approval by the enforcement agency under either of the following conditions:*

A. ~~1.~~ The concrete plant complies fully with the requirements of ASTM C94, Sections 9 and 10, and has a current certificate from the National Ready Mixed Concrete Association or another agency acceptable to the enforcement agency. The certification shall indicate that the plant has automatic batching and recording capabilities.

B. ~~2.~~ For single-story light-framed construction (without basement or retaining walls higher than 6 feet in height measured from bottom of footing to top of wall) and isolated foundations supporting equipment only, where deep foundation elements are not used.

When continuous batch plant inspection is waived, the following requirements shall apply and shall be described in the construction documents:

1. An approved agency shall check the first batch at the start of the day to verify materials and proportions conform to the approved mix design.

2. A licensed weighmaster shall positively identify quantity of materials and certify each load by a batch ticket.

3. Batch tickets, including material quantities and weights shall accompany the load, shall be transmitted to the inspector of record by the truck driver with load identified thereon. The load shall not be placed without a batch ticket identifying the mix. The inspector of record shall keep a daily record of placements, identifying each truck, its load, and time of receipt at the jobsite, and approximate location of deposit in the structure and shall maintain a copy of the daily record as required by the enforcement agency.

…

1705*A*.4 Masonry construction. *Special inspections* and tests of *masonry* construction shall be performed in accordance with the quality assurance program requirements of TMS 402 and TMS 602*, as set forth in Tables 3 and 4, Level 3 requirements and Chapter 21A. Testing shall be performed in accordance with Section 2105A. Special inspection and testing of post-installed anchors in masonry shall be required in accordance with requirements for concrete in Chapters 17A and 19A.*

1705*A*.4.1 Glass unit masonry and masonry veneer in Risk Category *II, III or IV.* *Special inspections* and tests for glass unit *masonry* or *masonry veneer* designed in accordance with Section 2110*A* or Chapter 14, respectively, where they are part of a *structure* classified as *Risk Category II, III or* IV shall be performed in accordance with TMS 602 *Tables 3 and 4,* Level 2.

TMS 602 Table 4 footnote d is not permitted, periodic special inspection shall be performed for all adhered veneer.

…

1705*A*.13 Special inspections for seismic resistance. *Special inspections* for seismic resistance shall be required as specified in Sections 1705*A*.13.1 through 1705*A*.13.9, unless exempted by the exceptions of Section 1704*A*.2.

…

1705*A*.13.1 Structural steel. *Special inspections* for seismic resistance shall be in accordance with Section 1705*A*.13.1.1 or 1705*A*.13.1.2, as applicable.

1705*A*.13.1.1 Seismic force-resisting systems. *Special inspections* of structural steel in the *seismic force-resisting systems* in *buildings* and *structures* assigned to *Seismic Design Category* D, E or F shall be performed in accordance with the quality assurance requirements of AISC 341 ***[OSHPD 1 & 4]*** and this code. ~~*as modified by Section 1705A.2.1 of this code.*~~

1705A.13.1.2 Structural steel elements. *Special inspections* of *structural steel elements* in the *seismic force-resisting systems* of *buildings* and *structures* assigned to *Seismic Design Category* D, E or F other than those covered in Section 1705A.13.1.1, including struts, *collectors*, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341 ***[OSHPD 1 & 4]*** and this code. ~~*as modified by Section 1705A.2.1 of this code.*~~

…

1705*A*.14 Testing for seismic resistance. Testing for seismic resistance shall be required as specified in Sections 1705*A*.14.1 through 1705*A*.14.4, unless exempted from special inspections by the exception of Section 1704*A*.2.

1705*A*.14.1 Structural steel. Nondestructive testing for seismic resistance shall be in accordance with Section 1705*A*.14.1.1 or 1705*A*.14.1.2, as applicable.

1705*A*.14.1.1 Seismic force-resisting systems. Nondestructive testing of structural steel in the *seismic force-resisting systems* in *buildings* and *structures* assigned to *Seismic Design Category* D, E or F shall be

performed in accordance with the quality assurance requirements of AISC 341 ***[OSHPD 1 & 4]*** and this code.

1705 *A*.**14.1.2 Structural steel elements.** Nondestructive testing of *structural steel elements* in the *seismic force-resisting systems* of *buildings* and *structures* assigned to *Seismic Design Category* D, E or F other than those covered in Section 1705*A*.14.1.1, including struts, *collectors*, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341***[OSHPD 1 & 4]*** and this code.

1705*A*.14.2 Nonstructural components. For structures assigned to Seismic Design Category D, E or F, where the requirements of Section 13.2.1 of ASCE 7 for nonstructural components, supports or attachments are met by *manufacturer's certification* as specified in Item 2 therein, the registered design professional shall specify on the approved construction documents the requirements for seismic *certification* by analysis *or* testing. ~~Certificates of compliance for the *manufacturer's certification* shall be submitted to the building official as specified in Section 1704*A*.5.~~

Seismic sway bracing components satisfying requirements of ANSI/FM 1950, ~~or~~ ANSI/ASHRAE 171 or using an alternative testing protocol approved by the building official shall be deemed to satisfy the requirements of this section.

…

1705*A*.14.3 *Special seismic certification*. For structures assigned to Seismic Design Category D, E or F *equipment and components* that are subject to the requirements of Section 13.2.3 of ASCE 7 for *special seismic* certification, the registered design professional shall specify on the approved construction documents the requirements to be met by analysis *or* testing as specified therein. Certificates of compliance documenting that the requirements are met shall be submitted to the building official as specified in Section 1704*A*.5.

…

1705A.14.3.1 [OSHPD 1 & 4] *Special seismic certification shall be required for the following systems, equipment and components:*

…

…

Exceptions:

1. Equipment and components weighing not more than ~~50~~ 100 lbs. ~~supported directly on~~ rigidly attached to structures (without supports), or surface mounted on equipment or components that are not required to have special seismic certification by this section.

…

7. Substitution of ~~Certified~~ certified active subcomponents up to operating weight of ~~10~~ 20 lbs.

…

SECTION 1710A - OFF-SITE CONSTRUCTION
[OSHPD 1 & 4]

1710A.1 General. *This section applies to off-site construction and shall govern the requirements for planning, design, fabrication, assembly, inspection and regulatory compliance.*

1710A.2 Construction. *In addition to other applicable requirements in this code, off-site construction shall be constructed in accordance with ICC 1200, with the texts modified by Sections 1710A.2.1 through 1710A.2.2.*

1710A.2.1 ICC 1200 Section 301.4. *Replace ICC 1200 Section 301 as follows:*

301.4 Use of shipping containers repurposed as buildings and building components. *Use of shipping containers repurposed as buildings and building components is not permitted by the California Building Code (CBC) Section 3115.*

1710A.2.2 ICC 1200 Section 503.1. *Modify ICC 1200 Section 503.1 by adding the following:*
QA/QC shall satisfy all the requirements for Testing, Inspection, and Observation (TIO) in the California Building Standards Code (CBSC).

1710A.3 Regulatory Compliance. *In addition to other applicable requirements in this code, off-site construction shall be inspected and regulated in accordance with ICC 1205, with texts modified by Sections 1710A.3.1 through 1710A.3.2.*

1710A.3.1 ICC 1205 Section 302.1. *Modify ICC 1205 Section 302.1 by adding the following:*
Construction documents for plan approval shall satisfy all the requirements in the California Building Standards Code (CBSC).

1710A.3.2 ICC 1205 Section 401.1. *Modify ICC 1205 Section 501.1 by adding the following:*

Testing, Inspection, and Observation (TIO) program shall satisfy all the requirements in the California Building Standards Code (CBSC).

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 18
SOILS AND FOUNDATIONS

SECTION 1801 - GENERAL

1801.1 Scope. The provisions of this chapter shall apply to *building* and foundation systems.

***1801.1.1 Application**. **[OSHPD 1R, 2 & 5]** The scope of application of Chapter 18 is as follows:*

Structures regulated by the Office of Statewide ~~Healt~~h Hospital Planning and Development (OSHPD), which include ~~those applications listed in Sections 1.10.1, 1.10.2, and 1.10.5. These applications include: H~~ hospital buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility buildings and acute psychiatric hospital buildings, as listed in Sections 1.10.1, 1.10.2 and 1.10.5.

***1801.1.2 Amendments in this chapter. [OSHPD 1R, 2 & 5]** OSHPD adopts this chapter as amended. ~~and all amendments.~~*

***~~Exception:~~** ~~Amendments not adopted or adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency.~~*

***1801.1.3 Identification of amendments. [OSHPD 1R, 2 & 5]** Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD) amendments appear in this chapter preceded with the appropriate acronym, as follows:*

***[OSHPD 1R**] – For applications listed in Section 1.10.1.*
***[OSHPD 2]** – For applications listed in Section 1.10.2.*
***[OSHPD 5]** – For applications listed in Section 1.10.5.*

…

SECTION 1803 - GEOTECHNICAL INVESTIGATIONS

1803.1 General. Geotechnical investigations shall be conducted in accordance with Section 1803.2 and reported in accordance with Section 1803.6. Where required by the *building official* or where geotechnical investigations involve in-situ testing, laboratory testing or engineering calculations, such investigations shall be conducted by a *registered design professional*. ***[OSHPD 1R, 2 & 5]*** *The classification, testing and investigation of the soil shall be made under the responsible charge of a California registered geotechnical engineer. All recommendations contained in geotechnical and geohazard reports shall be subject to the approval of the enforcement agency. All reports shall be prepared and signed by a registered geotechnical engineer, certified engineering geologist and a registered geophysicist, where applicable.*

1803.2 Investigations required. Geotechnical investigations shall be conducted in accordance with Sections 1803.3 through 1803.5.

Exception: The *building official* shall be permitted to waive the requirement for a geotechnical investigation where satisfactory data from adjacent areas is available that demonstrates an investigation is not necessary for any of the conditions in Sections 1803.5.1 through 1803.5.6 and Sections 1803.5.10 and 1803.5.11.

[OSHPD 1R, 2 & 5] *Geotechnical reports are not required for one-story, wood-frame and light-steel-frame buildings of Type V construction and 4,000 square feet (371 m2) or less in floor area, not located within Earthquake Fault Zones or Seismic Hazard Zones as shown in the most recently published maps from the California Geological Survey (CGS). Allowable foundation and lateral soil pressure values may be determined from Table 1806.2.*

…

1803.5.4 Groundwater. A geotechnical investigation shall be performed to determine if:

1. Groundwater is above or within 5 feet (1524 mm) below the elevation of the *lowest floo*r level where such floor is located below the finished ground level adjacent to the foundation.
2. The groundwater depth will affect the design and construction of *buildings* and *structures*.

~~Exception:~~ ***~~[OSHPD 1R, 2 & 5]~~*** *~~Not permitted by OSHPD.~~*

…

1803.7 Geohazard reports. [OSHPD 1R, 2 & 5] *Geohazard reports shall be required for all proposed construction.*

Exceptions:

1. Reports are not required for one-story, wood-frame and light-steel-frame buildings of Type V skilled nursing or intermediate care facilities construction and 4,000 square feet (371 m^2) or less in floor area, not located within Earthquake Fault Zones or Seismic Hazard Zones as shown in the most recently published maps from the California Geological Survey (CGS). ~~;~~
2. Reports are not required for the following scopes of work in existing buildings: Nonstructural ~~nonstructural~~, associated structural or voluntary structural alterations, and incidental structural additions or alterations, and structural repairs for other than earthquake damage.
~~2~~ 3. A previous report for a specific site may be resubmitted, provided that a reevaluation is made, and the report is found to be currently appropriate.

The purpose of the geohazard report shall be to identify geologic and seismic conditions that may require project mitigations. The reports shall contain data which provide an assessment of the nature of the site and potential for earthquake damage based on appropriate investigations of the regional and site geology, project foundation conditions and the potential seismic shaking at the site. The report shall be prepared by a California-certified engineering geologist in consultation with a California-registered geotechnical engineer.

The preparation of the geohazard report shall consider the most recent CGS Note 48; Checklist for the Review of Engineering Geology and Seismology Reports for California Public School, Hospitals and Essential Services Buildings. In addition, the most recent version of CGS Special Publication 42, Fault Rupture Hazard Zones in California, shall be considered for project sites proposed within an Alquist-Priolo Earthquake Fault Zone. The most recent version of CGS Special Publication 42~~;~~ Earthquake Fault ~~Rupture Hazard~~ Zones, A Guide for Government Agencies, Property Owners / Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California, shall be considered for project sites proposed within a Seismic Hazard Zone. All conclusions shall be fully supported by satisfactory data and analysis.

In addition to requirements in Sections 1803.5.11 and 1803.5.12, the report shall include, but ~~shall~~ need not be limited to, the following:

1. Site geology.
2. Evaluation of the known active and potentially active faults, both regional and local.
3. Ground-motion parameters, as required by Section 1613 and ASCE 7.

…

SECTION 1807 - FOUNDATION WALLS, RETAINING WALLS AND EMBEDDED POSTS AND POLES

1807.1 Foundation walls. Foundation walls shall be designed and constructed in accordance with Sections 1807.1.1 through 1807.1.6. Foundation walls shall be supported by foundations designed in accordance with Section 1808.

…
…

1807.2 Retaining walls. Retaining walls shall be designed in accordance with Sections 1807.2.1 through 1807.2.4. ~~***[OSHPD 1R, 2, & 5]*** *Freestanding cantilever walls shall be designed in accordance with Section 1807.2.5.*~~

…

~~***1807.2.5 Freestanding cantilever walls. [OSHPD 1R, 2, & 5]*** *A stability check against the possibility of overturning shall be performed for isolated spread footings which support freestanding cantilever walls. The stability check shall be made by dividing Rp used for the wall by 2.0. The allowable soil pressure may be doubled for this evaluation.*~~

~~***Exception:*** *For overturning about the principal axis of rectangular footings with symmetrical vertical loading and the design lateral force applied, a triangular or trapezoidal soil pressure distribution which covers the full width of the footing will meet the stability requirement.*~~

…

SECTION 1808 – FOUNDATIONS

1808.1 General. Foundations shall be designed and constructed in accordance with Sections 1808.2 through 1808.9. *Shallow foundations* shall satisfy the requirements of Section 1809. *Deep foundations* shall satisfy the requirements of Section 1810.

…

1808.8.6 Seismic requirements. ~~***[OSHPD 1R, 2, & 5]***~~ See Section 1905 for additional requirements for foundations of *structures* assigned to *Seismic Design Category* C, D, E or F.

For *structures* assigned to *Seismic Design Category* C, D, E or F, provisions of Section 18.13 of ACI 318 shall apply where not in conflict with the provisions of Sections 1808 through 1810.

…

SECTION 1809 - SHALLOW FOUNDATIONS

1809.1 General. *Shallow foundations* shall be designed and constructed in accordance with Sections 1809.2 through 1809.13.

…

…

1809.14 Grade beams. Grade beams shall comply with the provisions of ACI 318.

Exception: Grade beams not subject to differential settlement exceeding one-fourth of the thresholds specified in ASCE 7 Table 12.13-3 and designed to resist the seismic *load effects* including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7 need not comply with ACI 318 Section 18.13.3.1.

1809.15 ~~***1809.14***~~ ***Pipes and Trenches. [OSHPD 1R, 2 & 5]*** *Unless otherwise recommended by the soils report, open or backfilled trenches parallel with a footing shall not be below a plane having a downward slope of 1 unit vertical to 2 units horizontal (50-percent slope) from a line 9 inches (229 mm) above the bottom edge of the footing, and not closer than 18 inches (457 mm) from the face of such footing.*

Where pipes cross under footings, the footings shall be specially designed. Pipe sleeves shall be provided where pipes cross through footings or footing walls and sleeve clearances shall provide for possible footing settlement, but not less than 1 inch (25 mm) all around pipe.

Exception: *Alternate trench locations and pipe clearances shall be permitted when approved by registered design professional* ~~*in responsible charge*~~ *and the enforcement Agent.*

…

SECTION 1810 - DEEP FOUNDATIONS

1810.1 General. *Deep foundations* shall be analyzed, designed, detailed and installed in accordance with Sections 1810.1 through 1810.4.

…

1810.3.9.4.2.1 Site Classes A through DE. For *Site Class* A, B, BC, C, CD, D or DE sites, transverse confinement reinforcement shall be provided in the element in accordance with Sections 18.7.5.2, 18.7.5.3 and 18.7.5.4 of ACI 318 within three times the least element dimension of the bottom of the pile cap. A transverse spiral reinforcement ratio of not less than one-half of that required in Table 18.10.6.4(g) of ACI 318 shall be permitted.

~~***[OSHPD 1R, 2 & 5]*** *A transverse spiral reinforcement ratio of not less than one-half of that required in Section 18.7.5.4 of ACI 318 shall be permitted for concrete deep foundation elements.*~~

…

1810.3.12 Grade beams. Grade beams shall comply with the provisions of ACI 318.

Exception: Grade beams not subject to differential settlement exceeding one-fourth of the thresholds specified in ASCE 7 Table 12.13-3 and designed to resist the seismic *load effects* including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7 need not comply with ACI 318 Section 18.13.3.1.

[OSHPD 1R, 2 & 5] *Need not comply with Section 18.13.3 of ACI 318.*

…

SECTION 1812 - EARTH RETAINING SHORING [OSHPD 1R, 2 & 5]

1812.1 General. *The requirements of this section shall apply to temporary and permanent earth-retaining shoring using soldier piles and lagging with or without tie-back anchors in soil or rock, only when existing or new facilities are affected. Shoring used as construction means and methods only, which does not affect existing or new facilities, is not regulated by this section and shall satisfy the requirements of the authorities having jurisdiction.*

Design, construction, testing and inspection shall satisfy the requirements of this code except as modified in Sections 1812.2 through 1812.8.

1812.2 Duration. *Shoring shall be considered temporary when elements of the shoring will be exposed to site conditions for a period of less than or equal to 2 years, and shall be considered permanent otherwise. Permanent shoring shall account for the increase in lateral soil pressure due to earthquake. At the end of the construction period, the existing and new structures shall not rely on the temporary shoring for support in anyway. Wood components shall not be used for permanent shoring lasting more than 2 years. Wood components of the temporary shoring that may affect the performance of permanent structure shall be removed after the shoring is no longer required.*

All components of the shoring shall have corrosion protection or preservative treatment for their expected duration. Wood components of the temporary shoring that will not be removed shall be treated in accordance with AWPA U1 (Commodity Specification A, Use Category 4B and compatible species per Section 5.2), and shall be identified in accordance with Section 2303.1.9.

…

1812.4.3 Testing of tie-back anchors*:*

1. The geotechnical engineer shall keep a record at the job site of all test loads and total anchor movement, and report their accuracy.

2. If a tie-back anchor initially fails the testing requirements, the anchor shall be permitted to be regrouted and retested. If the anchor continues to fail, the followings steps shall be taken:

a. The contractor shall determine the cause of failure: (variations of the soil conditions,

installation methods, materials, etc.).

b. The contractor shall propose a solution to remedy the problem. The proposed solution will need to be reviewed and approved by geotechnical engineer, shoring design engineer and the building official.
3. After a satisfactory test, each anchor shall be locked off in accordance with PTI Recommendations for Prestressed Rock and Soil Anchors Section 8.4.
4. The shoring design engineer shall specify design loads for each anchor.

1812.5 Construction: *The construction procedure shall address the following:*
1. Holes drilled for piles/tie-back anchors shall be done without detrimental loss of ground, sloughing or caving of materials and without endangering previously installed shoring members or existing foundations.
2. Drilling of earth anchor shafts for tie-backs shall occur when the drill bench reaches 2 to 3 feet below the level of the tie-back pockets.
3. Casing or other methods shall be used where necessary to prevent loss of ground and collapse of the hole.
4. Drill cuttings from the earth anchor shaft shall be removed prior to anchor installation.
5. Unless tremie methods are used, all water and loose materials shall be removed from the holes prior to installing piles/tie-backs.
6. Tie-back anchor rods with attached centralizing devices shall be installed into the shaft or through the drill casing. Centralizing devices shall not restrict movement of the grout.
7. After lagging installation, voids between lagging and soil shall be backfilled immediately to the full height of lagging.
8. The soldier piles shall be placed within specified tolerances in the drilled hole and braced against displacement during grouting. ~~Fill s~~ Shafts shall be filled with concrete up to ~~top of footing~~ the elevation shown in construction documents. ~~,~~ ~~rest~~ The remainder of the shaft ~~can generally~~ shall be permitted to be filled with ~~lean~~ Controlled Low-Strength Materials (CLSMs), when permitted by construction documents. Excavation for lagging shall not be started until concrete has achieved sufficient strength for all anticipated loads as determined by the shoring design engineer.
9. Where boulders and/or cobbles have been identified in the geotechnical reports, the contractor shall be prepared to address boulders and/or cobbles that may be encountered during the drilling of soldier piles and tie-back anchors.
10. The grouting equipment shall produce grout free of lumps and indispensed cement. The grouting equipment shall be sized to enable the grout to be pumped in continuous operation. The mixer shall be capable of continuously agitating the grout.
11. The quantity of grout and grout pressure shall be recorded. The grout pressure shall be controlled to prevent excessive heave in soils or fracturing rock formations.
12. If post-grouting is required, post-grouting operation shall be performed after initial grout has set for 24 hours in the bond length only. Tie-backs shall be grouted over a sufficient length (anchor bond length) to transfer the maximum anchor force to the anchor grout.

13. Testing of anchors may be performed after postgrouting operations, provided that grout has reached a strength of 3,000 psi as required by PTI Recommendations
for Prestressed Rock and Soil Anchors Section 6.11.
14. Anchor rods shall be tensioned straight and true. Excavation directly below the anchors shall not continue before those anchors are tested.

1812.6 Inspection, survey monitoring and observation.

1. The shoring design engineer or his designee shall make periodic inspections of the job site for the purpose of observing the installation of the shoring system, testing of tie-back anchors and monitoring of the survey.
2. Testing, inspection and observation shall be in accordance with testing, inspection and observation requirements approved by the building official. The following activities and materials shall be tested, inspected or observed by the special inspector and
geotechnical engineer:

- *~~a.~~ 2.1 Sampling and testing of concrete in soldier pile and tie-back anchor shafts.*
- *~~b.~~ 2.2 Fabrication of tie-back anchor pockets on soldier beams*
- *~~c.~~ 2.3 Installation and testing of tie-back anchors.*
- *~~d.~~ 2.4 Survey monitoring of soldier pile and tie-back load cells.*
- *~~e.~~ 2.5 Survey monitoring of existing buildings.*

3. A complete and accurate record of all soldier pile locations, depths, concrete strengths, tie-back locations and lengths, tie-back grout strength, quantity of concrete per pile, quantity of grout per tie-back and applied tie-back loads shall be maintained by the special inspector and geotechnical engineer. The shoring design engineer shall be notified of any unusual conditions encountered during installation.
4. Calibration data for each test jack, pressure gauge and master pressure gauge shall be verified by the special inspector and geotechnical engineer. The calibration
tests shall be performed by an independent testing laboratory and within 120 calendar days of the data submitted.
5. Monitoring points shall be established at the top and at the anchor heads of selected soldier piles and at intermediate intervals as considered appropriate by the geotechnical engineer.
6. Control points shall be established outside the area of influence of the shoring system to ensure the accuracy of the monitoring readings.
7. The periodic basis of shoring monitoring, at a minimum, shall be as follows:

- *~~a.~~ 7.1 Initial monitoring shall be performed prior to any excavation.*
- *~~b.~~ 7.2 Once excavation has begun, the periodic readings shall be taken weekly until excavation reaches the estimated subgrade elevation and the permanent foundation is complete.*
- *~~c.~~ 7.3 If performance of the shoring is within established guidelines, shoring design engineer may permit the periodic readings to be biweekly. Once initiated, biweekly readings shall continue until the building slab at*

ground floor level is completed and capable of transmitting lateral loads to the permanent structure. Thereafter, readings can be monthly.

~~d.~~ 7.4 Where the building has been designed to resist lateral earth pressures, the periodic monitoring of the soldier piles and adjacent structure can be discontinued once the ground floor diaphragm and subterranean portion of the structure is capable of resisting lateral soil loads and approved by the shoring design engineer, geotechnical engineer and the building official.

~~e.~~ 7.5 Additional readings shall be taken when requested by special inspector, shoring design engineer, geotechnical engineer or the building official.

8. Monitoring readings shall be submitted to shoring design engineer, engineer in responsible charge, and the building official within 3 working days after they are conducted. Monitoring readings shall be accurate to within 0.01 feet. Results are to be submitted in tabular form showing at least the initial date of monitoring and reading, current monitoring date and reading and difference between the two readings.

9. If the total cumulative horizontal or vertical movement (from start of construction) of the existing buildings reaches 1/2 inch or soldier piles movement reaches 1 inch all excavation activities shall be suspended. The geotechnical and shoring design engineers shall determine the cause of movement, if any, and recommend corrective measures, if necessary, before excavation continues.

10. If the total cumulative horizontal or vertical movement (from start of construction) of the existing buildings reaches 3/4 inch or soldier piles movement reaches 11/2 inches all excavation activities shall be suspended until the causes, if any, can be determined.

Supplemental shoring shall be devised to eliminate further movement and the building official shall review and approve the supplemental shoring before excavation continues.

11. Monitoring of tie-back anchor loads:

~~a.~~ 11.1 Load cells shall be installed at the tie-back heads adjacent to buildings at maximum interval of 50 feet, with a minimum of one load cell per wall.

~~b.~~ 11.2 Load cell readings shall be taken once a day during excavation and once a week during the remainder of construction.

~~c.~~ 11.3 Load cell readings shall be submitted to the geotechnical engineer, shoring design engineer, engineer in responsible charge and the building official.

~~d.~~ 11.4 Load cell readings can be terminated once the temporary shoring no longer provides support for the buildings.

1812.7 Monitoring of existing OSHPD 1, 1R, 2, 4 and 5 structures.

1. The contractor shall complete a written and photographic log of all existing OSHPD 1, 1R, 2, 4 & 5 structures within 100 feet or three times depth of shoring, prior to construction. A licensed surveyor shall document all existing substantial cracks in adjacent existing structures.

2. The contractor shall document the existing condition of wall cracks adjacent to shoring walls prior to the start of construction.
3. The contractor shall monitor existing walls for movement or cracking that may result from adjacent shoring.
4. If excessive movement or visible cracking occurs, the contractor shall stop work and shore/reinforce excavation and contact the shoring design engineer and the building official.
5. Monitoring of the existing structure shall be at reasonable intervals as required by the registered design professional, subject to approval of the building official. Monitoring shall be performed by a licensed surveyor and shall consist of vertical and lateral movement of the existing structures. Prior to the start~~ing~~ of shoring installation a preconstruction meeting shall take place between the contractor, shoring design engineer, surveyor, geotechnical engineer and the building official to identify monitoring locations on existing buildings.
6. If in the opinion of the building official or shoring design engineer, monitoring data indicate excessive movement or other distress, all excavation shall cease until the geotechnical engineer and shoring design engineer investigate the situation and make recommendations for remediation or continuing.
7. All reading and measurements shall be submitted to the building official and shoring design engineer.

1812.8 Tolerances. *The following tolerances shall be specified on the construction documents.*
1. Soldier piles:
~~i.~~ 1.1 Horizontal and vertical construction tolerances for the soldier pile locations.
~~ii.~~1.2 Soldier pile plumbness requirements (angle with vertical line).
2. Tie-back anchors:
i. 2.1Allowable deviation of anchor projected angle from specified vertical and horizontal design projected angle.
~~ii.~~ 2.2 Anchor clearance to the existing/new utilities and structures.

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 18A
SOILS AND FOUNDATIONS

SECTION 1801*A* – GENERAL

1801*A*.1 Scope. The provisions of this chapter shall apply to *building* and foundation systems.

1801A.1.1 Application. *The scope of application of Chapter 18A is as follows:*

1. Reserved for DSA-SS.

2. Applications listed in Section 1.10.1 and 1.10.4 regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD). These applications include hospitals and correctional treatment centers.

1801A.1.2 Amendments in this chapter. *OSHPD adopt this chapter and all amendments.*

Exception: *Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:*

1. Reserved for DSA-SS.

2. Office of Statewide ~~Health~~ Hospital Planning and Development:
[OSHPD 1] - *For applications listed in Section 1.10.1.*
[OSHPD 4] - *For applications listed in Section 1.10.4.*

…

SECTION 1803*A* - GEOTECHNICAL INVESTIGATIONS

1803*A*.1 General. Geotechnical investigations shall be conducted in accordance with Section 1803*A*.2 and reported in accordance with Section *1803A.7. The classification and investigation of the soil shall be made under the responsible charge of a California registered geotechnical engineer. All recommendations contained in geotechnical and geohazard reports shall be subject to the approval of the enforcement agency. All reports shall be prepared and signed by a registered geotechnical engineer, a certified engineering geologist and a registered geophysicist, where applicable.*

…

1803A.6 Geohazard reports. *Geohazard reports shall be required for all proposed construction.*

Exceptions:

1. Reports are not required for one-story, wood-frame and light-steel-frame buildings of Type II or Type V construction and 4,000 square feet (371 m2) or less in floor area, not located within Earthquake Fault Zones or Seismic Hazard Zones as shown in the most recently published maps from the California

Geological Survey (CGS) or in seismic hazard zones as defined in the Safety Element of the local General Plan. ~~;~~

2. Reports are not required for the following scopes of work in existing buildings:

Nonstructural ~~nonstructural~~, associated structural or voluntary structural alterations, [OSHPD 1 & 4] and incidental structural additions or alterations, and structural repairs for other than earthquake damage.

3. ~~2.~~ A previous report for a specific site may be resubmitted, provided that a reevaluation is made, and the report is found to be currently appropriate.

The purpose of the geohazard report shall be to identify geologic and seismic conditions that may require project mitigations. The reports shall contain data which provide an assessment of the nature of the site and potential for earthquake damage based on appropriate investigations of the regional and site geology, project foundation conditions and the potential seismic shaking at the site. The report shall be prepared by a California-certified engineering geologist in consultation with a California-registered geotechnical engineer.

The preparation of the geohazard report shall consider the most recent CGS Note 48: Checklist for the Review of Engineering Geology and Seismology Reports for California Public School, Hospitals, and Essential Services Buildings. In addition, the most recent version of CGS Special Publication 42; ~~,~~ Earthquake Fault ~~Rupture Hazard~~ Zones, A Guide for Government Agencies, Property Owners / Developers, and Geoscience Practitioners for Assessing Fault Rupture Hazards in California, shall be considered for project sites proposed within an Alquist-Priolo Earthquake Fault Zone. The most recent version of CGS Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards in California, shall be considered for project sites proposed within a Seismic Hazard Zone. All conclusions shall be supported by satisfactory data and analysis.

In addition to requirements in Sections 1803A.5.11 and 1803A.5.12, the report shall include, but ~~shall~~ need not be limited to, the following:

1. Site geology.
2. Evaluation of the known active and potentially active faults, both regional and local.
3. Ground-motion parameters, as required by Sections 1613A and 1617A, and ASCE 7.

~~The Next Generation Attenuation West 2 (NGA-West 2) relations used for the 2014 USGS seismic hazards maps for Western United States (WUS) shall be utilized to determine the site-specific ground motion. When supported by data and analysis, and approved by the enforcement agency, other attenuation relations that were not used for the 2014 USGS maps shall be permitted as additions or substitutions. No fewer than three NGA attenuation relations shall be utilized.~~

…

SECTION 1807*A* - FOUNDATION WALLS, RETAINING WALLS AND EMBEDDED POSTS AND POLES

1807*A*.1 Foundation walls. Foundation walls shall be designed and constructed in accordance with Sections 1807*A*.1.1 through 1807*A*.1.6. Foundation walls shall be supported by foundations designed in accordance with Section 1808*A*.

…

1807*A*.2 Retaining walls. Retaining walls shall be designed in accordance with Sections 1807*A*.2.1 through 1807*A*.2.4. ~~*Freestanding cantilever walls shall be designed in accordance with Section 1807A.2.5.*~~

…

~~***1807A.2.5 Freestanding cantilever walls.*** *Freestanding cantilever walls shall comply with Section 15.6.8 of ASCE 7.* ***[OSHPD 1 & 4]****. A stability check against the possibility of overturning shall be performed for isolated spread footings which support freestanding cantilever walls. The allowable soil pressure may be doubled for this evaluation.*~~

> ~~***Exception [OSHPD 1 & 4]:*** *For overturning about the principal axis of rectangular footings with symmetrical vertical loading and the design lateral force applied, a triangular or trapezoidal soil pressure distribution which covers the full width of the footing will meet the stability requirement.*~~

…

SECTION 1809*A* - SHALLOW FOUNDATIONS

1809*A*.1 General. Shallow foundations shall be designed and constructed in accordance with Sections 1809*A*.2 through 1809*A*.13.

…

1809*A*.14 Grade beams. Grade beams shall comply with the provisions of ACI 318.

> **Exception:** Grade beams not subject to differential settlement exceeding one-fourth of the thresholds specified in ASCE 7 Table 12.13-3 and designed to resist the seismic *load effects* including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7 need not comply with ACI 318 Section 18.13.3.1.

1809A.15 ~~***1809A.14***~~ ***Pipes and trenches.*** *Unless otherwise recommended by the soils report, open or backfilled trenches parallel with a footing shall not be below a plane having a downward slope of 1 unit vertical to 2 units horizontal (50 percent slope) from a line 9 inches (229 mm) above the bottom edge of the footing, and not closer than 18 inches (457 mm) from the face of such footing.*

Where pipes cross under footings, the footings shall be specially designed. Pipe sleeves shall be provided where pipes cross through footings or footing walls and sleeve clearances shall provide for possible footing settlement, but not less than 1 inch (25 mm) all around pipe.

> ***Exception:*** *Alternate trench locations and pipe clearances shall be permitted when approved by registered design professional in responsible charge and the enforcement agent.*

…

SECTION 1810*A* - DEEP FOUNDATIONS

1810*A*.1 General. Deep foundations shall be analyzed, designed, detailed and installed in accordance with Sections 1810*A*.1 through 1810*A*.4.

…

1810*A*.3.3 Determination of allowable loads. The allowable axial and lateral loads on *deep foundation* elements shall be determined by an *approved* formula, load tests or method of analysis.

…

1810*A*.3.3.1.2 Load tests. Where design compressive loads are greater than those determined using the allowable stresses specified in Section 1810*A*.3.2.6, where the design load for any deep foundation element is in doubt, *where driven deep foundation elements are installed by means other than a pile hammer,* or where cast-in-place deep foundation elements have an enlarged base formed either by compacting concrete or by driving a precast base, control test elements shall be tested in accordance with ASTM D1143 ~~*including Procedure G: Cyclic Loading Test*~~ or ASTM D4945. One element or more shall be load tested in each area of uniform subsoil conditions. Where required by the building official, additional elements shall be load tested where necessary to establish the safe design capacity. The resulting allowable loads shall not be more than one-half of the ultimate axial load capacity of the test element as assessed by one of the published methods listed in Section 1810*A*.3.3.1.3 with consideration for the test type, duration and subsoil. The ultimate axial load capacity shall be determined by a registered design professional with consideration given to tolerable total and differential settlements at design load in accordance with Section 1810*A*.2.3. In subsequent installation of the balance of deep foundation elements, all elements shall be deemed to have a supporting capacity equal to that of the control element where such elements are of the same type, size and relative length as the test element; are installed using the same or comparable methods and equipment as the test element; are installed in similar subsoil conditions as the test element; and, for driven elements, where the rate of penetration (for example, net displacement per blow) of such elements is equal to or less than that of the test element driven with the same hammer through a comparable driving distance, *or where the downward pressure and torque on such elements is greater than or equal to that applied to the test element that determined the ultimate axial load capacity at a comparable driving distance.*

…

1810*A*.3.3.1.5 Uplift capacity of a single deep foundation element. Where required by the design, the uplift capacity of a single deep foundation element shall be determined by an approved method of analysis based on a minimum factor of safety of three or by load tests conducted in accordance with ASTM D3689. The maximum allowable uplift load shall not exceed the ultimate load capacity as determined in Section 1810*A*.3.3.1.2, using the results of load tests conducted in accordance with ASTM D3689, ~~*including the cyclic loading procedure*~~, divided by a factor of safety of two.

Exception: Where uplift is due to wind or seismic loading, the minimum factor of safety shall be two where capacity is determined by an analysis and one and one-half where capacity is determined by load tests.

…

1810*A*.3.3.2 Allowable lateral load. Where required by the design, the lateral load capacity of a single *deep foundation* element or a group thereof shall be determined by an *approved* method of analysis or by lateral load tests *in accordance with ASTM D3966,* ~~*including the cyclic loading procedure,*~~ to not less than twice the proposed design working *load*. The resulting allowable lateral *load* shall not be more than one-half of the *load* that produces a gross lateral movement of 1 inch (25 mm) at the lower of the top of the foundation element and the ground surface, unless it can be shown that the predicted lateral movement shall cause neither harmful distortion of, nor instability in, the *structure*, nor cause any element to be loaded beyond its capacity. Group effects shall be evaluated where required by Section 1810*A*.2.5.

…

1810*A*.3.12 Grade beams. Grade beams shall comply with the provisions of ACI 318.

Exception: Grade beams not subject to differential settlement exceeding one-fourth of the thresholds specified in ASCE 7 Table 12.13-3 and designed to resist the seismic *load effects* including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7 ~~*need not comply with Section 18.13.3 of ACI 318*~~ need not comply with ACI 318 Section 18.13.3.1.

…

SECTION 1811A
PRESTRESSED ROCK AND SOIL FOUNDATION ANCHORS

1811A.1 General. *The requirements of this section address the use of vertical rock and soil anchors in resisting seismic or wind overturning forces resulting in tension on shallow foundations.*

…

1811A.4 Structural Requirements.

1. Tendons shall be thread-bar anchors conforming to ASTM A722.

2. The anchors shall be placed vertical.

3. Design loads shall be based upon the load combinations in Section 2.4 of ASCE 7 and shall not exceed 60 percent of the specified minimum tensile strength of the tendons.
4. Ultimate load shall be based upon Section ~~1617A.1.16~~ 1617A.1.3 and shall not exceed 80 percent of the specified minimum tensile strength of the tendons.
5. The anchor shall be designed to fail in grout bond to the soil or rock before pullout of the soil wedge by group effect.
6. Foundation design shall incorporate the effect of lockoff loads.
7. Design shall account for as-built locations of soil anchors considering all the acceptable construction tolerances.
8. Design shall account for both short- and long-term deformation.
9. Enforcement agency may require consideration of anchor deformation in evaluating deformation compatibility or building drift where it may be significant.

…

SECTION 1812A
EARTH RETAINING SHORING

1812A.1 General. *The requirements of this section shall apply to temporary and permanent earth retaining shoring using soldier piles and lagging with or without tie-back anchors in soil or rock, only when existing or new facilities are affected. Shoring used as construction means and methods only, which does not affect existing or new facilities, are not regulated by this section and shall satisfy the requirements of the authorities having jurisdiction.*

Design, construction, testing and inspection shall satisfy the requirements of this code except as modified in Sections 1812A.2 through 1812A.8.

1812A.2 Duration. *Shoring shall be considered temporary when elements of the shoring will be exposed to site conditions for a period of less than or equal to 2 years and shall be considered permanent otherwise. Permanent shoring shall account for the increase in lateral soil pressure due to earthquake. At the end of the construction period, the existing and new structures shall not rely on the temporary shoring for support in any way. Wood components shall not be used for permanent shoring lasting more than 2 years. Wood components of the temporary shoring that may affect the performance of permanent structure shall be removed after the shoring is no longer required.*

All components of the shoring shall have corrosion protection or preservative treatment for their expected duration. Wood components of the temporary shoring that will not be removed shall be treated in accordance with AWPA U1 (Commodity Specification A, Use Category 4B and compatible species per Section 5~~.2~~), and shall be identified in accordance with Section 2303.1.9.1.

…

***1812A.4.3 Testing of tie-back anchors**:*

1. The geotechnical engineer shall keep a record at the job site of all test loads, total anchor movement, and report their accuracy.

2. The shoring design engineer shall specify design loads for each anchor.

***1812A.5 Construction.** The construction procedure shall address the following:*

1. Holes drilled for piles/tie-back anchors shall be done without detrimental loss of ground, sloughing or caving of materials and without endangering previously installed shoring members or existing foundations.

2. Drilling of earth anchor shafts for tie-backs shall occur when the drill bench reaches two to three feet below the level of the tie-back pockets.

3. Casing or other methods shall be used where necessary to prevent loss of ground and collapse of the hole.

4. The drill cuttings from earth anchor shaft shall be removed prior to anchor installation.

5. Unless tremie methods are used, all water and loose materials shall be removed from the holes prior to installing piles/tie-backs.

6. Tie-back anchor rods with attached centralizing devices shall be installed into the shaft or through the drill casing. Centralizing device shall not restrict movement of the grout.

7. After lagging installation, voids between lagging and soil shall be backfilled immediately to the full height of lagging.

8. The soldier piles shall be placed within specified tolerances in the drilled hole and braced against displacement during grouting. ~~Fill s~~ Shafts shall be filled with concrete up to ~~top of footing~~ the elevation shown in construction documents. ~~,~~ ~~rest~~ The remainder of the shaft ~~can generally~~ shall be permitted to be filled with ~~lean~~ Controlled Low Strength Materials (CLSMs), when permitted by construction documents. Excavation for lagging shall not be started until concrete has achieved sufficient strength for all anticipated loads as determined by the shoring design engineer.

9. Where boulders and/or cobbles have been identified in the geotechnical reports, contractor shall be prepared to address boulders and/or cobbles that may be encountered during the drilling of soldier piles and tie-back anchors.

10. The grouting equipment shall produce grout free of lumps and indispensed cement. The grouting equipment shall be sized to enable the grout to be pumped in continuous operation. The mixer shall be capable of continuously agitating the grout.

11. The quantity of grout and grout pressure shall be recorded. The grout pressure shall be controlled to prevent excessive heave in soils or fracturing rock formations.

12. If post-grouting is required, post-grouting operation shall be performed after initial grout has set for 24 hours in the bond length only. Tie-backs shall be grouted over a sufficient length (anchor bond length) to transfer the maximum anchor force to the anchor grout.

13. Testing of anchors in accordance with Section 1812A.4.1, Item 7 may be performed after post-grouting operations, provided grout has reached strength of

3,000 psi as required by PTI Recommendations for Prestressed Rock and Soil Anchors Section 6.11.

14. Anchor rods shall be tensioned straight and true. Excavation directly below the anchors shall not continue before those anchors are tested.

15. If a tie-back anchor initially fails the testing requirements, the anchor shall be permitted to be regrouted and retested. If anchor continues to fail, the followings steps shall be taken:

~~a.~~ 15.1 The contractor shall determine the cause of failure - variations of the soil conditions, installation methods, materials, etc.

~~b.~~ 15.2 The contractor shall propose a solution to remedy the problem. The proposed solution will need to be reviewed and approved by the geotechnical engineer, shoring design engineer and building official.

16. After a satisfactory test, each anchor shall be lockedoff in accordance with Section 8.4 of PTI Recommendations for Prestressed Rock and Soil Anchors.

1812A.6 Inspection, survey monitoring and observation.

1. The shoring design engineer or his designee shall make periodic visits to the job site for the purpose of observing the installation of shoring system, testing of tie-back anchors and monitoring of survey.

2. Testing, inspection and observation shall be in accordance with testing, inspection and observation requirements approved by the building official. The following activities and materials shall be tested, inspected or observed by the special inspector and geotechnical engineer:

~~a.~~ 2.1 Sampling and testing of concrete in soldier pile and tie-back anchor shafts.

~~b.~~ 2.2 Fabrication of tie-back anchor pockets on soldier beams

~~c.~~ 2.3 Installation and testing of tie-back anchors.

~~d.~~ 2.4 Survey monitoring of soldier pile and tie-back load cells.

~~e.~~ 2.5 Survey monitoring of existing buildings.

3. A complete and accurate record of all soldier pile locations, depths, concrete strengths, tie-back locations and lengths, tie-back grout strength, quantity of concrete per pile, quantity of grout per tie-back and applied tie-back loads shall be maintained by the special inspector and geotechnical engineer. The shoring design engineer shall be notified of any unusual conditions encountered during installation.

4. Calibration data for each test jack, pressure gauge and master pressure gauge shall be verified by the special inspector and geotechnical engineer. The calibration

tests shall be performed by an independent testing laboratory and within 120 calendar days of the data submitted.

5. Monitoring points shall be established at the top and at the anchor heads of selected soldier piles and at intermediate intervals as considered appropriate by the geotechnical engineer.

6. Control points shall be established outside the area of influence of the shoring system to ensure the accuracy of the monitoring readings.

7. The periodic basis of shoring monitoring, as a minimum, shall be as follows:

~~a.~~ 7.1 Initial monitoring shall be performed prior to any excavation.

~~b.~~ 7.2 Once excavation has begun, the periodic readings shall be taken weekly until excavation reaches the estimated subgrade elevation and the permanent foundation is complete.

~~c.~~ 7.3 If performance of the shoring is within established guidelines, shoring design engineer may permit the periodic readings to be bi-weekly. Once initiated, bi-weekly readings shall continue until the building slab at ground floor level is completed and capable of transmitting lateral loads to the permanent structure. Thereafter, readings can be monthly.

~~d.~~ 7.4 Where the building has been designed to resist lateral earth pressures, the periodic monitoring of the soldier piles and adjacent structure can be discontinued once the ground floor diaphragm and subterranean portion of the structure is capable of resisting lateral soil loads and approved by the shoring design engineer, geotechnical engineer and building official.

~~e.~~ 7.5 Additional readings shall be taken when requested by the special inspector, shoring design engineer, geotechnical engineer or building official.

8. Monitoring reading shall be submitted to the shoring design engineer, engineer in responsible charge and building official within three working days after they are conducted. Monitoring readings shall be accurate to within 0.01 feet. Results are to be submitted in tabular form showing at least the initial date of monitoring and reading, current monitoring date and reading and difference between the two readings.

9. If the total cumulative horizontal or vertical movement (from start of construction) of the existing buildings reaches 1/2 inch or soldier piles reaches 1 inch all excavation activities shall be suspended. The geotechnical and shoring design engineer shall determine the cause of movement, if any, and recommend corrective measures, if necessary, before excavation continues.

10. If the total cumulative horizontal or vertical movement (from start of construction) of the existing buildings reaches 3/4 inch or soldier piles reaches 1 ½ inches all excavation activities shall be suspended until the causes, if any, can be determined. Supplemental
shoring shall be devised to eliminate further movement and the building official shall review and approve the supplemental shoring before excavation continues.

11. Monitoring of tie-back anchor loads:

~~a.~~ 11.1 Load cells shall be installed at the tie-back heads adjacent to buildings at maximum interval of 50 feet, with a minimum of one load cells per wall.

~~b.~~ 11.2 Load cell readings shall be taken once a day during excavation and once a week during the remainder of construction.

~~c.~~ 11.3 Load cell readings shall be submitted to the geotechnical engineer, shoring design engineer, engineer in responsible charge and building official.

~~d.~~ 11.4 Load cell readings can be terminated once the temporary shoring no longer provides support for the buildings.

1812A.7 Monitoring of existing structures.

1. The contractor shall complete a written and photographic log of all existing structures within 100 ft or three times depth of shoring, prior to construction. A times depth of shoring, prior to construction. A licensed surveyor shall document all existing substantial cracks in adjacent existing structures.
2. The contractor shall document the existing condition of wall cracks adjacent to shoring walls prior to the start of construction.
3. The contractor shall monitor existing walls for movement or cracking that may result from adjacent shoring.
4. If excessive movement or visible cracking occurs, the contractor shall stop work and shore/reinforce excavation and contact the shoring design engineer and building
official.
5. Monitoring of the existing structure shall be at reasonable intervals as required by the registered design professional subject to approval of the building official. Monitoring shall be performed by a licensed surveyor and shall consist of vertical and lateral movement of the existing structures. Prior to the starting of shoring installation, a preconstruction meeting shall take place between the contractor, shoring design engineer, surveyor, geotechnical engineer and building official to identify monitoring locations on existing buildings.
6. If in the opinion of the building official or shoring design engineer, monitoring data indicate excessive movement or other distress, all excavation shall cease until the geotechnical engineer and shoring design engineer investigate the situation and make recommendations for remediation or continuing.
7. All reading and measurements shall be submitted to the building official and shoring design engineer.

1812A.8 Tolerances. *The following tolerances shall be specified on the construction documents.*

1. Soldier piles:
i. 1.1 Horizontal and vertical construction tolerances for the soldier pile locations.
ii. 1.2 Soldier pile plumbness requirements (angle with vertical line).
2. Tie-back anchors:
i. 2.1 Allowable deviation of anchor projected angle from specified vertical and horizontal design projected angle.
ii. 2.2 Anchor clearance to the existing/new utilities and structures.

…

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 19
CONCRETE

~~*State of California amendments in these sections are shown in italics and underlined.*~~

SECTION 1901 – GENERAL

1901.1 Scope. The provisions of this chapter shall govern the materials, quality control, design and construction of concrete used in *structures*.

1901.1.1 Application. [OSHPD 1R, 2 & 5] *The scope of application of Chapter 19 is as follows:*

1. Reserved for DSA-SS.

2. Structures regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD), ~~Applications listed in Sections 1.10.1, 1.10.2 and 1.10.5 regulated by the Office of Statewide Health Planning and Development (OSHPD). These applications~~ which include hospital buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility buildings and acute psychiatric hospital buildings listed in Sections 1.10.1, 1.10.2 and 1.10.5.

1901.1.2 Amendments in this chapter. [OSHPD 1R, 2 & 5] *adopts this chapter as amended. ~~and all amendments.~~*

~~Exceptions:~~ *~~Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:~~*

1901.1.3 Identification of amendments. [OSHPD 1R, 2 & 5]

1. Reserved for DSA-SS.

*2. **[OSHPD 1R, 2 & 5]** Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD) amendments appear in this chapter preceded by the appropriate acronym, as follows:*

***[OSHPD 1R]** – For applications listed in Section 1.10.1.*
***[OSHPD 2]** – For applications listed in Section 1.10.2.*
***[OSHPD 5]** – For applications listed in Section 1.10.5.*

1901.1.4 ~~***1901.1.3***~~ *Reserved for DSA-SS.*

~~***1901.1.4 Amendments. [OSHPD]***~~
~~*1.* ***[OSHPD 1R, 2 & 5]*** *See Section 1910 for additional requirements applicable to hospital buildings that have been removed from acute care service, skilled nursing and intermediate care facility buildings, and acute psychiatric hospital buildings.*~~

…

1901.3 Anchoring to concrete. Anchoring to concrete shall be in accordance with ACI 318 as supplemented in Section 1905, and applies to cast-in (headed bolts, headed studs and hooked J- or L-bolts), post-installed expansion (torque-controlled and displacement-controlled), undercut, screw, and adhesive anchors.

…

1901.3.3 Post-installed adhesive anchors. [OSHPD 1R, 2 & 5] *Post-installed reinforcing bars, adhesive anchors, and torque-controlled adhesive anchors qualified in accordance with ICC-ES AC 308 shall be deemed to satisfy the requirements of this section.*

1901.3.4 Proof Tests for post-installed anchors in concrete. [OSHPD 1R, 2 & 5] *When post-installed anchors are used in lieu of cast-in place bolts or reinforcing bars, the ~~installation verification~~ proof test loads, frequency, and acceptance criteria shall be in accordance with this section.*

Exceptions. *Proof tests are not required for the following: [Moved from 1901.3.4.3]*

1. *Undercut anchors that allow visual confirmation of full set.*
2. *Repetitively installed anchors (with 3 or more identical anchors) of diameter one-quarter (1/4)-in. or less used for distributed systems or architectural components.*
3. *Power actuated fasteners used to attach tracks of interior nonshear wall partitions for shear only, where there are at least three fasteners per segment of track.*
4. *Shear dowels across cold joints in slabs on grade, where the slab is not structural in accordance with Section 1907.1.*

1901.3.4.1 General. *Test loads or torques, test frequencies, and acceptance criteria shall be shown on the construction documents.*

If any anchor fails testing, all untested anchors of the same type and installed by the same trade shall be tested~~, which are installed by the same trade, not previously tested~~ until twenty (20) consecutive anchors pass, then resume the initial test frequency.

[Moved from below] Anchors to be tested shall be selected at random by the special inspector/ or inspector of record (IOR). when 100 percent of the anchors are not tested.

The testing of the post-installed anchors shall be done in the presence of the special inspector and a report of the test results shall be submitted to the enforcement agency.

1901.3.4.2 Proof T testing procedure. *The test procedure shall be as permitted by an approved evaluation report using criteria adopted in this code. All p Post-installed anchors shall be tension tested. **[OSHPD 1R, 2 & 5]** Tension testing to verify proper installation shall be performed in accordance with ASTM E3121 with test frequency and test loads in accordance with Sections 1901.3.4.3 and 1901.3.4.4 respectively.*

***User Note:** Proof tests using ASTM E3121 tension test procedure do not require displacement measurement.*

> ***Exception:** Torque controlled post installed and screw type anchors shall be permitted to be tested using torque based on an approved evaluation report using criteria adopted in this code.*

Alternatively, manufacturer's recommendation for testing may be approved by the enforcement agency based on an approved evaluation report using criteria adopted in this code.

1901.3.4.3 Test frequency. *[Moved from below]*

1901.3.4.3.1 Structural Applications. *When100 percent of post-installed anchors are used for other structural applications, all such anchors shall be proof tested.*

[Moved to exceptions below] When post-installed anchors are used for sill plate bolting applications, 10 percent of the anchors shall be tested.

[Moved above] When post-installed anchors are used for other structural applications, all such anchors shall be tested.

[Moved to nonstructural applications below] When post-installed anchors are used for nonstructural components, such as equipment anchorage, 50 percent or alternate bolts in a group, including at least one-half the anchors in each group, shall be tested.

> ***Exceptions:***
> 1. *[Moved from main body of section above to exception] **Sill bolts.** When post-installed anchors are used for sill plate bolting applications, 10 percent of the anchors shall be tested.*

2. ***Rebar Dowels.*** *Where adhesive anchor systems are used to install reinforcing dowel bars in hardened concrete, ~~only~~ 25 percent of ~~the~~ dowels shall be tested if all ~~of~~ the following conditions are met:*

   2.1 ~~a.~~ The dowels are used exclusively to transmit shear forces across joints between existing and new concrete.

   2.2 ~~b.~~The number of dowels in any one member equals or exceeds twelve (12).

   2.3 ~~c.~~ The dowels are uniformly distributed across seismic force resisting members (such as shear walls, collectors and diaphragms).

[Moved to 1901.3.4]~~Undercut anchors that allow visual confirmation of full set, shall not require testing.~~

1901.3.4.3.2 Nonstructural Applications. *50 percent of post-installed anchors used in nonstructural applications shall be proof tested. The percentage of tested anchors applies to each set of anchors of a common type (e.g. adhesive, wedge, or shell and sleeve for expansion bolts), size, and embedment depth and to each group of anchors. Four or more anchors connected to a common element shall be defined as a group.*

Exceptions:

1. ***Repetitive anchors.*** *When anchors are used repetitively (with 3 or more identical anchors) in distributed systems (such as pipe, duct or conduit supports) or architectural systems (such as suspended ceilings, cladding, and partitions) 20 percent of anchors, including at least one anchor in each group, shall be tested.*

   [Moved to 1901.3.4] ~~Testing is not required for power actuated fasteners used to attach tracks of interior nonshear wall partitions for shear only, where there are at least three fasteners per segment of track.~~

   .

2. ***Anchors with Low tension.*** *Where the design tension on anchors is less than 100 pounds and those anchors are clearly noted on the approved construction documents, ~~only~~ 10 percent of ~~those~~ anchors shall be tested.*

~~1.~~ *[Moved to structural applications above]~~Where adhesive anchor systems are used to install reinforcing dowel bars in hardened concrete, only 25 percent of the dowels shall be tested if all of the following conditions are met:~~*

~~*a. The dowels are used exclusively to transmit shear forces across joints between existing and new concrete.*~~

~~*b. The number of dowels in any one member equals or exceeds twelve (12).*~~

~~*c. The dowels are uniformly distributed across seismic force resisting members (such as shear walls, collectors and diaphragms).*~~

~~*2. **Shear dowels in slabs on grade.** [Moved to 1901.3.4]Testing of Where shear dowels are used across cold joints in slabs on grade, where and the slab is not structural in accordance with Section 1907A.1, testing is part of the lateral force-resisting system shall not be required.*~~

[Moved to 1901.3.4.1]~~*Anchors to be tested shall be selected at random by the special inspector / or inspector of record (IOR).*~~

~~*The testing of the post-installed anchors shall be done in the presence of the special inspector and a report of the test results shall be submitted to the enforcement agency.*~~

[Moved to 1901.3.4] ~~*Testing is not required for power actuated fasteners used to attach tracks of interior nonshear wall partitions for shear only, where there are at least three fasteners per segment of track.*~~

~~*6. **[OSHPD 2B]** In state detention and correctional facilities, tension testing is not required for post-installed anchors used for attaching nonstructural components, such as grab bars and shower seats, to concrete walls if the components do not contribute to security/detainment, life safety and the continuous operation of the institution following an event of extreme environmental loading from flood, wind, snow or earthquakes, as determined by the enforcing agency.*~~

1901.3.4.4 Test loads. *Required test loads shall be determined by one of the following methods:*

1. *Twice the maximum allowable tension load or one and a quarter (1 1/4) times the maximum design strength of anchors as provided in approved evaluation report using criteria adopted in this code or determined in accordance with Chapter 17 of ACI 318.*

   Tension test load need not exceed 80 percent of the nominal yield strength of the anchor element (= 0.8 A_{se} f_{ya}).

2. *The manufacturer's recommended installation torque based on approved evaluation report using criteria adopted in this code.*

1901.3.4.5 Test acceptance criteria. *~~Acceptance criteria for post-installed anchors shall be based on approved evaluation report using criteria adopted in this code. Field~~ Proof test shall satisfy following minimum requirements.*

1. ***~~Hydraulic ram method~~ Tension test:*** *Anchors shall be tested in the unconfined condition in accordance ASTM E3121 except that the minimum clearance to the test frame shall be 1.5 times the anchor's embedment depth. ~~tested with a hydraulic jack or spring-loaded devices shall maintain the t~~ Test load shall be maintained for a minimum of 15 seconds and shall exhibit no discernable movement during the tension test, e.g., as evidenced by loosening of the washer under the nut or an abrupt decrease in the gauge pressure. ~~The testing apparatus support locations shall be greater than or equal to 1.5 times the anchor's embedment depth to avoid restricting the concrete shear cone type failure mechanism from occurring.~~*

   Exception: *~~When denoted accordingly on the approved construction documents, adhesive anchors complying with ACI 318 Equation 17.8.2a and for which concrete breakout does not control the design tensile strength may be tested with apparatus support locations closer than 1.5 times the anchor embedment depth.~~ Adhesive anchors shall be permitted to be tested in confined conditions in accordance with ASTM E3121 when the approved construction documents indicate that concrete breakout does not control the design tensile strength.*

2. ***Torque test: ~~wrench method:~~*** *Torque-controlled post-installed anchors tested with a calibrated torque wrench shall attain the specified torque within 1/2 turn of the nut; or one quarter (1/4) turn of the nut for a 3/8-inch sleeve anchor only.*

   Exception: *Screw-type anchors tested with a calibrated torque wrench shall attain the specified torque within one-quarter (1/4) turn of the screw after initial seating of the screw head.*

…

SECTION 1903 - SPECIFICATIONS FOR TESTS AND MATERIALS

1903.1 General. Materials used to produce concrete, concrete itself and testing thereof shall comply with the applicable standards listed in ACI 318.

…

~~1903.2 Special inspections.~~ *~~Where required, special inspections and tests shall be in accordance with Chapter 17. **[OSHPD 1R, 2 & 5]** and Section 1901.~~*

1903.2 Glass fiber-reinforced concrete. Glass fiber-reinforced concrete (GFRC) and the materials used in such concrete shall be in accordance with the PCI 128.

1903.3 Flat wall insulating concrete form (ICF) systems. Insulating concrete form material used for forming flat concrete walls shall conform to ASTM E2634. ***[OSHPD 1R, 2 & 5]*** *Not Permitted by OSHPD.*

…

~~***1903.5 Aggregates - [OSHPD 1R, 2 & 5]*** *Modify ACI 318 Section 26.4.1.2.1(a).(1) as follows:*~~

> ~~*(1)* ***Normal weight aggregate:*** *Aggregate shall be nonreactive as determined by one of the methods in ASTM C33 Appendix X1: Methods for Evaluating Potential for Deleterious Expansion Due to Alkali Reactivity of an Aggregate. Aggregates deemed to be deleterious or potentially deleterious may be used with the addition of a material that has been shown to prevent harmful expansion in accordance with Appendix X1 of ASTM C33, when approved by the building official.*~~

~~***1903.6 Limits on Cementitious Materials. [OSHPD 1R, 2 & 5]*** *Modify ACI 318 Section 26.4.2.2(b) and Table 26.4.2.2(b) as follows:*~~

~~*The maximum percentage of pozzolans, including fly ash and silica fume, and slag cement in concrete assigned to all exposure categories shall be in accordance with Table 26.4.2.2(b) and Section 26.4.2.2(b) Items (1) and (2).*~~

~~*Where pozzolans are used as cementitious materials, duration for minimum specified compressive strength of concrete (f 'c) that exceeds 28 days shall be considered an alternative system.*~~

1903.4 ~~***1903.7***~~ ***Steel fiber reinforcement*** *-* ***[OSHPD 1R, 2 & 5]*** *Not permitted by OSHPD.*

1903.5 ~~***1903.8***~~ ***Welding of reinforcing bars*** *-* ***[OSHPD 1R, 2 & 5]*** *Modify ACI 318 Section 26.6.4.1(b) by adding the following:*

Subject to prior approval of the enforcing agency, longitudinal holding wires conforming to ASTM A1064, of maximum wire size W5, that are machine resistance welded to stirrup/tie cage (or spiral assemblies) consisting of low alloy steel reinforcing conforming to ASTM A706 are permitted when performed under continuous competent control in a fabrication shop. Tack welding of primary reinforcing bars together or to stirrups/ties is not permitted. Holding wire weld locations shall not occur on any longitudinal or primary reinforcing nor on any portion of a reinforcing bar that is or will be bent in accordance with ACI 318 Section 25.3 for the extents specified in AWS D1.4 Section 4.2.6.

Quality control tests shall be performed on shop welded specimens by the fabricator. Reinforcing steel specimens containing the holding wire shall be tested for yield and

tensile strength at the frequency required by Section 1910.2. Test reports shall be available on request to the approved agency, design professional and enforcement agency.

…

SECTION 1905 - SEISMIC REQUIREMENTS

1905.1 General. In addition to the provisions of ACI 318, structural concrete shall comply with the requirements of Section 1905.

…

1905.5 Detailed plain concrete structural walls. Detailed plain concrete structural walls are walls conforming to the requirements of ordinary plain concrete structural walls and Section 1905.5.1.

[Relocated from existing Section 1905.1.7] ***[OSHPD 1R, 2 & 5]*** *Plain concrete shall not be permitted. ~~for a structure assigned to Seismic Design Category (SDC) D, E and F.~~*

…

1905.6 Structural plain concrete. Structural plain concrete elements shall comply with this section in lieu of Section 14.1.4 of ACI 318.

[Relocated from existing Section 1905.1.7] ***[OSHPD 1R, 2 & 5]*** *Plain concrete shall not be permitted. ~~for a structure assigned to Seismic Design Category (SDC) D, E and F.~~*

…

SECTION 1906 - FOOTINGS FOR LIGHT-FRAME CONSTRUCTION

[OSHPD 1R, 2 & 5] *Plain concrete footings ~~N~~ not permitted by OSHPD.*

1906.1 Plain concrete footings. For Group R-3 occupancies and *buildings* of other occupancies less than two *stories above grade plane* of *light-frame construction*, the required thickness of plain concrete footings is permitted to be 6 inches (152 mm), provided that the footing does not extend more than 4 inches (102 mm) on either side of the supported wall.

…

SECTION 1908 - SHOTCRETE

1908.1 General. Shotcrete shall be in accordance with the requirements of ACI 318. ***[OSHPD 1R, 2 & 5]*** *and the provisions of ACI 506R.*

[Moved from Section 1908.2 below] Preconstruction tests of one or more shotcrete mockup panels prepared in accordance with Section 1705.3.9.2 are required. In addition to testing requirements in ACI 318, special inspection and testing shall be in accordance with Section 1705.3.9.

The evaluation of the shotcrete mockup panel to qualify bar clearance dimensions in accordance with ACI 318 Section 25.2.7 or contact lap splices in accordance with ACI 318 Section 25.5.1.7 shall be in accordance with the requirements of ACI 506.4R with a core quality category of Very Good given in ACI 506.6T.

[Moved to Section 1908.1 above] ~~***1908.2 Tests and inspections.*** ***[OSHPD 1R, 2 & 5]*** *Preconstruction tests of one or more shotcrete mockup panels prepared in accordance with Section 1705A.3.9.2 are required. In addition to testing requirements in ACI 318, special inspection and testing shall be in accordance with Section 1705A.3.9.*~~

Shotcrete construction shall be in accordance with the requirements of ACI SPEC-506.2

[Moved to Section 1910.3.4] ~~***1908.3 Forms and ground wires for shotcrete.*** *Forms for shotcrete shall be substantial and rigid. Forms shall be built and placed so as to permit the escape of air and rebound.*~~

~~*Adequate ground wires, which are to be used as screeds, shall be placed to establish the thickness, surface planes and form of the shotcrete work. All surfaces shall be rodded to these wires.*~~

…

SECTION 1910 - ADDITIONAL REQUIREMENTS FOR SKILLED NURSING FACILITIES, INTERMEDIATE CARE FACILITIES, ACUTE PSYCHIATRIC AND NON-GAC BUILDINGS [OSHPD 1R, 2 & 5]

1910.1 General.
1910.1.1 Construction documents. *Openings larger than 12 inches (305 mm) in any dimension shall be detailed on the structural drawings.*
…

~~***1910.3.4 ACI 318, Table 21.2.2.*** *Replace Table 21.2.2 as follows:*~~

[Delete Table 21.2.2 in its entirety]

…

1910.3.4 ACI 318, Section 26.11.1.2. *[Moved from Section 1908.3]* *Modify ACI 318 Section 26.11.1.2 by adding item (e) as follows:*

> *(e) Forms for shotcrete shall be substantial and rigid. Forms shall be built and placed so as to permit the escape of air and rebound. Adequate ground wires, which are to be used as screeds, shall be placed to establish the thickness, surface planes and form of the shotcrete work. All surfaces shall be rodded to these wires.*

…

SECTION 1911 - EXISTING CONCRETE STRUCTURES
[OSHPD 1R, 2 & 5]

1911.1 Concrete Core Sampling. *Where concrete cores are required to be taken for material property determination, cores shall be at least 4 inches (102 mm) in diameter. Cores as small as 2.75 inches (70 mm) in diameter may be allowed by the enforcement agency when reinforcement is closely spaced, and the coarse aggregate does not exceed 3/4 inch (19 mm).*

1911.2 Crack repair by epoxy injection. *Crack Repair of concrete and masonry member by epoxy injection shall conform to all requirements of ACI ~~503.7~~ SPEC-548.15.*
…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 19*A*
CONCRETE

~~*State of California amendments in these sections are shown in italics and underlined.*~~

SECTION 1901*A* – GENERAL

1901*A*.1 Scope. The provisions of this chapter shall govern the materials, quality control, design and construction of concrete used in *structures*.

…

1901*A*.2 *R*einforced concrete. Structural concrete shall be designed and constructed in accordance with the requirements of this chapter and ACI 318 as supplemented in Section 1905*A* of this code, *except that plain concrete is not permitted.*

~~**1901.2.1 Structural concrete with GFRP reinforcement.** Cast-in-place structural concrete internally reinforced with glass fiber reinforced polymer (GFRP) reinforcement conforming to ASTM D7957 and designed in accordance with ACI CODE 440.11 shall be permitted where fire-resistance ratings are not required and only for *structures* assigned to *Seismic Design Category* A.~~

…

1901*A*.5 Construction documents. The *construction documents* for structural concrete construction shall include:

1. The specified compressive strength of concrete at the stated ages or stages of construction for which each concrete element is designed.
2. The specified strength or grade of reinforcement.
3. The size and location of structural elements, reinforcement and anchors.
4. Provision for dimensional changes resulting from creep, shrinkage and temperature.
5. The magnitude and location of prestressing forces.
6. Anchorage length of reinforcement and location and length of lap splices.
7. Type and location of mechanical and welded splices of reinforcement.
8. Details and location of contraction or isolation *joints*. ~~specified for plain concrete.~~
9. Minimum concrete compressive strength at time of posttensioning.
10. Stressing sequence for posttensioning tendons.
11. For structures assigned to *Seismic Design Category* D, E or F, a statement if slab on grade is designed as a structural *diaphragm*.
12. *Openings larger than 12 inches (305 mm) in any dimension shall be detailed on the structural drawings.*

…

SECTION 1902*A*—COORDINATION OF TERMINOLOGY

1902A.1 General. Coordination of terminology used in ACI 318 and ASCE 7 shall be in accordance with Section 1902A.1.1.

1902*A*.1.1 Design displacement. Design displacement shall be the Design Earthquake Displacement, δ_{DE}, defined in ASCE 7 Section 12.8.6.3. For diaphragms that can be idealized as rigid in accordance with ASCE 7 Section 12.3.1.2, δ_{di}, displacement due to *diaphragm* deformation corresponding to the design earthquake, is permitted to be taken as zero.

[Existing section deleted by Model Code] ~~**1902*A*.1.2 Special structural wall.** Special structural walls made of cast-in-place or precast concrete shall comply with the requirements of Sections 18.2.4 through 18.2.8, 18.10 and 18.11 of ACI 318, as applicable, in addition to the requirements for *ordinary reinforced concrete structural walls* or *ordinary precast structural walls*, as applicable. Where ASCE 7 refers to a "special reinforced concrete shear wall," it shall be deemed to mean a "special structural wall."~~

…

SECTION 1903*A* - SPECIFICATIONS FOR TESTS AND MATERIALS

1903*A*.1 General. Materials used to produce concrete, concrete itself and testing thereof shall comply with the applicable standards listed in ACI 318.

~~**1903*A*.2 Special inspections.** *Where required, special inspections and tests shall be in accordance with Chapter 17A and Section 1910A.*~~

…

1903*A*.3 Flat wall insulating concrete form (ICF) systems. Insulating concrete form material used for forming flat concrete walls shall conform to ASTM E2634. ***[OSHPD 1 & 4]*** *Not Permitted by OSHPD.*

~~***1903A.5 Aggregates*** *– Modify ACI 318 Section 26.4.1.2.1(a).(1) as follows:*~~

~~*(1)* ***Normal weight aggregate:*** *Aggregate shall be nonreactive as determined by one of the methods in ASTM C33 Appendix XI: Methods for Evaluating Potential for Deleterious Expansion Due to Alkali Reactivity of an Aggregate. Aggregates deemed to be deleterious or potentially deleterious may be used with the addition of a material that has been shown to prevent harmful expansion in accordance with Appendix XI of ASTM C33, when approved by the building official.*~~

~~***1903A.6 [OSHPD 1 & 4] Limits on cementitious materials.*** *Modify ACI 318 Section 26.4.2.2(b) and Table 26.4.2.2(b) as follows:*~~
~~*The maximum percentage of pozzolans, including fly ash and silica fume, and slag cement in concrete assigned to all exposure categories shall be in accordance with Table 26.4.2.2(b) and Section 26.4.2.2(b) Items (1) and (2).*~~

~~*Where pozzolans are used as cementitous materials, duration for minimum specified compressive strength of concrete (f'c) that exceeds 28 days shall be considered an alternative system.*~~

1903A.4 ~~***1903A.7***~~ ***Steel fiber reinforcement*** *– Not permitted.*

1903A.5 ~~***1903A.8***~~ ***Welding of reinforcing bars*** *- Modify ACI 318 Section 26.6.4.2(b) by adding the following:*

Subject to prior approval of the enforcing agency, longitudinal holding wires, conforming to ASTM A1064 of maximum wire size W5, that are machine resistance welded to stirrup/tie cage (or spiral assemblies) consisting of low alloy steel reinforcing conforming to ASTM A706 are permitted when performed under continuous competent control in a fabrication shop. Tack welding of primary reinforcing bars together or to stirrups/ties is not permitted. Holding wire weld locations shall not occur on any longitudinal or primary reinforcing nor on any portion of a reinforcing bar that is or will be bent in accordance with ACI 318 Section 25.3 for the extents specified in AWS D1.4 Section 4.2.6.

Quality control tests shall be performed on shop-welded specimens by the fabricator. Reinforcing steel specimens containing the holding wire shall be tested for yield and

tensile strength at the frequency required by Section 1910A.2. Test reports shall be available on request to the approved agency, design professional and enforcement agency.

…

SECTION 1905*A* - SEISMIC REQUIREMENTS

1905*A*.1 General. In addition to the provisions of ACI 318, structural concrete shall comply with the requirements of Section 1905*A*. ~~*1905A.1.17.*~~

1905A.2 ACI 318 Section 2.3. Modify existing definitions and add the following definitions to ACI 318 Section 2.3:

CAST-IN-PLACE CONCRETE EQUIVALENT DIAPHRAGM. A cast-in-place noncomposite topping slab *diaphragm*, as defined in Section 18.12.5, or a *diaphragm* constructed with precast concrete components that uses closure strips between precast components with detailing that meets the requirements of ACI 318 for the *Seismic Design Category* of the *structure*.

~~**DETAILED PLAIN CONCRETE STRUCTURAL WALL.** A wall complying with the requirements of Chapter 14, and Section 1905.5 of the *International Building Code*.~~

~~**ORDINARY PLAIN CONCRETE STRUCTURAL WALL.** A wall complying with the requirements of Chapter 14, excluding 14.6.2.~~

~~**ORDINARY PRECAST STRUCTURAL WALL.** A precast wall complying with the requirements of Chapters 1 through 13, 15, 16 and 19 through 26.~~

~~**ORDINARY REINFORCED CONCRETE STRUCTURAL WALL.** A cast-in-place wall complying with the requirements of Chapters 1 through 13, 15, 16 and 19 through 26.~~

PRECAST CONCRETE DIAPHRAGM. A *diaphragm* constructed with precast concrete components, with or without a cast-in-place topping, that includes the use of discrete connectors or joint reinforcement to transmit *diaphragm* forces.

1905A.3 ~~***1905A.1.1***~~ ***ACI 318, Section 4.12.2.2.*** *Modify ACI 318, Section 4.12.2.2 by adding the following:*

Where prestressed concrete elements are restrained from movement, an analysis of the stresses in the prestressed elements and loads in the adjoining structural system induced by the above-described effects shall be made in accordance with PCI Design Handbook.

1905A.4 ~~***1905A.1.2***~~ ***ACI 318, Section 4.12.2.3.*** *Modify ACI 318, Section 4.12.2.3 by adding the following:*

For prestressed concrete members with recessed or dapped ends, an analysis of the connections shall be made in accordance with procedures given in PCI Design Handbook.

1905A.5 ~~***1905A.1.3***~~ ***ACI 318, Section 9.6.1.3.*** *Modify ACI 318, Section 9.6.1.3 by adding the following:*

This section shall not be used for members that resist seismic loads, except for either of the following conditions:

1. Foundation members for one-story wood-frame or one-story light steel buildings.

2. Foundation members designed for seismic load combinations including the overstrength factor. ~~***[OSHPD 1 & 4]***~~ *The A_s provided shall not be less than that required by 1.2 times the cracking load based upon f_r defined in Section 19.2.3.*

1905A.6 ~~***1905A.1.4***~~ ***ACI 318, Section 11.2.4.1.*** *Replace ACI 318, Section 11.2.4.1 as follows:*

11.2.4.1 – Walls shall be anchored to intersecting elements such as floors or roofs; or to columns, pilasters, buttresses, of intersecting walls and footings with reinforcement at least equivalent to No. 4 bars at 12 inches (305 mm) on center for each layer of reinforcement.

1905A.7 ~~***1905A.1.5***~~ ***ACI 318, Section 11.7.*** *Add Section 11.7.6 to ACI 318.1 as follows:*

11.7.6 – ***Reinforcement.*** *Perimeters of precast walls shall be reinforced continuously with a minimum of one No. 5 bar extending the full height and width of the wall panel. Where wall panels do not connect to columns or other wall panels to develop at least 75 percent of the horizontal wall steel as noted below, vertical perimeter bars shall be retained by hooked wall bars.*

A continuous tie or bond beam shall be provided at the roof line either as a part of the roof structure or part of the wall panels as described in the next paragraph below. This tie may be designed as the edge member of the roof diaphragm but, in any case, shall not be less than equivalent to two No. 6 bars continuous. A continuous tie equivalent to two No. 5 bars minimum shall also be provided either in the footing or with<u>in</u> an enlarged section of the floor slab.

Wall panels of shear wall buildings shall be connected to columns or to each other in such a manner as to develop at least 75 percent of the horizontal wall steel. No more than half of this continuous horizontal reinforcing shall be concentrated in bond or tie beams at the top and bottom of the walls and at points of intermediate lateral support. If possible, cast-in-place joints with reinforcing bars extending from the panels into the joint a sufficient distance to meet the splice requirements of ~~ACI 318,~~ Section 25.5.2, for Class A shall be

used. The reinforcing bars or welded tie details shall not be spaced over eight times the wall thickness vertically nor fewer than four used in the wall panel height. Where wall panels are designed for their respective overturning forces, the panel connections need not comply with the requirements of this paragraph.

***Exception:** Nonbearing, nonshear panels such as nonstructural architectural cladding panels or column covers are not required to meet the provisions of this section.*

1905A.8 ~~***1905A.1.6***~~ ***ACI 318, Section 11.9.*** *Modify ACI 318 by adding Section 11.9 as follows:*

11.9 – ***Foundation walls.*** *Horizontal reinforcing of concrete foundation walls for wood-frame or light-steel buildings shall consist of the equivalent of not less than one No. 5 bar located at the top and bottom of the wall. Where such walls exceed 3 feet (914 mm) in height, intermediate horizontal reinforcing shall be provided at spacing not to exceed 2 feet (610 mm) on center. Minimum vertical reinforcing shall consist of No. 3 bars at 24 inches (610 mm) on center.*

Where concrete foundation walls or curbs extend above the floor line and support wood-frame or light-steel exterior, bearing or shear walls, they shall be doweled to the foundation wall below with a minimum of No. 3 bars at 24 inches (610 mm) on center. Where the height of the wall above the floor line exceeds 18 inches (457 mm), the wall above and below the floor line shall meet the requirements of ~~*ACI 318,*~~ *Section 11.6 and 11.7.*

1905A.9 ~~***1905A.1.7***~~ ***ACI 318, Section 12.7.3.*** *Add Section 12.7.3.4 to ACI 318 as follows:*

12.7.3.4 – At least two No. 5 bars in diaphragms having two layers of reinforcement in ~~*both*~~ *either directions* ~~*and one No. 5 bar in diaphragms having a single layer of reinforcement in both directions shall be provided around openings larger than 12 inches in any dimension in addition to the minimum reinforcement required by Section 12.6.*~~

1905A.10 ~~**1905.3** *Reserved for DSA-SS.* **Intermediate precast structural walls.** Intermediate precast structural walls shall comply with Section 18.5 of ACI 318 and this section.~~

~~**1905.3.1 Connections designed to yield.** Connections that are designed to yield shall be capable of maintaining 80 percent of their *design strength* at the deformation induced by the design displacement or shall use Type 2 mechanical splices.~~

~~**1905.5 Detailed plain concrete structural walls.** Detailed plain concrete structural walls are walls conforming to the requirements of ordinary plain concrete structural walls and Section 1905.5.1.~~

~~**1905.5.1 Reinforcement.** Reinforcement shall be provided as follows:~~

1. Vertical reinforcement of not less than 0.20 square inch (129 mm2) in cross-sectional area shall be provided continuously from support to support at each corner, at each side of each opening, and at the ends of walls. The continuous vertical bar required beside an opening is permitted to substitute for one of the two No. 5 bars required by Section 14.6.1 of ACI 318.
2. Horizontal reinforcement of not less than 0.20 square inch (129 mm2) in cross-sectional area shall be provided:
    2.1. Continuously at structurally connected roof and floor levels and at the top of walls.
    2.2. At the bottom of *load-bearing walls* or in the top of foundations where doweled to the wall.
    2.3. At a maximum spacing of 120 inches (3048 mm).

Reinforcement at the top and bottom of openings, where used in determining the maximum spacing specified in Item 2.3, shall be continuous in the wall.

1905.6 Structural plain concrete. Structural plain concrete elements shall comply with this section in lieu of Section 14.1.4 of ACI 318.

1905.6.1 Seismic Design Categories A and B. In *structures* assigned to *Seismic Design Category* A or B, detached one- and two family dwellings three *stories* or less in height constructed with stud-bearing walls are permitted to have plain concrete footings
without longitudinal reinforcement.

1905.6.2 Seismic Design Categories C, D, E and F. *Structures* assigned to *Seismic Design Category* C, D, E or F shall not have elements of structural plain concrete, except as follows:

1. Structural plain concrete basement, foundation or other walls below the base as defined in ASCE/SEI 7 are permitted in detached one- and two-family *dwellings* three *stories* or less in height constructed with stud-bearing walls. In *dwellings* assigned to *Seismic Design Category* D or E, the height of the wall shall not exceed 8 feet (2438 mm), the thickness shall be not less than 71/2 inches (190 mm), and the wall shall retain not more than 4 feet (1219 mm) of unbalanced fill. Walls shall have reinforcement in accordance with Section 14.6.1 of ACI 318.
2. Isolated footings of plain concrete supporting pedestals or columns are permitted, provided that the projection of the footing beyond the face of the supported member does not exceed the footing thickness.
    Exception: In detached one- and two-family *dwellings* three *stories* or less in height, the projection of the footing beyond the face of the supported member is permitted to exceed the footing thickness.
3. Plain concrete footings supporting walls are permitted, provided that the footings have not fewer than two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less

~~than 0.002 times the gross cross-sectional area of the footing. For footings that exceed 8 inches (203 mm) in thickness, not fewer than one bar shall be provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.~~

~~**Exceptions:**~~

~~1. Where assigned to *Seismic Design Category* C, detached one- and two-family *dwellings* three *stories* or less in height constructed with stud-bearing walls are permitted to have plain concrete footings without longitudinal reinforcement.~~
~~2. For foundation systems consisting of a plain concrete footing and a plain concrete stemwall, not fewer than one bar shall be provided at the top of the stemwall and at the bottom of the footing.~~
~~3. Footings cast monolithically with a slab-on-ground shall have not fewer than one No. 4 bar at the top and bottom of the footing or one No. 5 bar or two No. 4 bars in the middle third of the footing depth.~~

1905A.11 ~~**1905.7**~~ **Design requirements for anchors.** For the design requirements for anchors, Sections *1905A.11.1* ~~1905.7.1~~ and ~~1905.7.2~~ *1905A.11.2* provide exceptions that are permitted to ACI 318.

1905A.11.1 ~~**1905.7.1**~~ **Anchors in tension.** The following exception is permitted to ACI 318 Section 17.10.5.2:

Exception: Anchors designed to resist wall out-of-plane forces with design strengths equal to or greater than the force determined in accordance with ASCE/SEI 7 Equation 12.11-1 ~~or 12.14-1~~ *and Section 1604A.8.2 of this code* shall be deemed to satisfy Section 17.10.5.3(d) of ACI 318.

1905A.11.2 ~~**1905.7.2**~~ **Anchors in shear.** The following exceptions are permitted to ACI 318 Section 17.10.6.2:

Exceptions:

1. For the calculation of the in-plane shear strength of anchor bolts attaching wood sill plates of bearing or nonbearing walls of light-frame wood structures to foundations or foundation stemwalls, the in-plane shear strength in accordance with Sections 17.7.2 and 17.7.3 of ACI 318 need not be computed and Section 17.10.6.3 of ACI 318 shall be deemed to be satisfied provided that all of the following are met:
   1.1. The allowable in-plane shear strength of the anchor is determined in accordance with ANSI/AWC NDS Table 12E for lateral design values parallel to grain.
   1.2. The maximum anchor nominal diameter is 5/8 inch (16 mm).
   1.3. Anchor bolts are embedded into concrete not less than 7 inches (178 mm).
   1.4. Anchor bolts are located not less than 1¾ inches (45 mm) from the edge of the concrete parallel to the length of the wood sill plate.

1.5. Anchor bolts are located not less than 15 anchor diameters from the edge of the concrete perpendicular to the length of the wood sill plate.
1.6. The sill plate is 2-inch (51 mm) or 3-inch (76 mm) nominal thickness.
2. For the calculation of the in-plane shear strength of anchor bolts attaching cold-formed steel track of bearing or nonbearing walls of light-frame construction to foundations or foundation stemwalls, the in-plane shear strength in accordance with Sections 17.7.2 and 17.7.3 of ACI 318 need not be computed and 17.10.6.3 shall be deemed to be satisfied provided that all of the following are met:

Allowable in-plane shear strength of exempt anchors, parallel to the edge of concrete, shall be permitted to be determined in accordance with AISI S100 Section J3.3.1.

2.1. The maximum anchor nominal diameter is 5/8 inch (16 mm).
2.2. Anchors are embedded into concrete a minimum of 7 inches (178 mm).
2.3. Anchors are located a minimum of 13/4 inches (45 mm) from the edge of the concrete parallel to the length of the track.
2.4. Anchors are located a minimum of 15 anchor diameters from the edge of the concrete perpendicular to the length of the track.
2.5. The track is 33 to 68 mil (0.84 mm to 1.73 mm) designation thickness.

3. In light-frame construction bearing or nonbearing walls, shear strength of concrete anchors less than or equal to 1 inch (25 mm) in diameter attaching sill plate or track to foundation or foundation stemwalls need not satisfy Sections 17.10.6.3(a) through (c) when the design strength of the anchors is determined in accordance with Section 17.7.2.1(c) of ACI 318.

1905A.12 ~~***1905A.1.10***~~ ***ACI 318, Section 18.10.6.5.*** *Modify ACI 318, Section 18.10.6.5 by adding the following:*

(c) Where boundary members are not required by ~~ACI 318~~ Section 18.10.6.2 or 18.10.6.3 minimum reinforcement parallel to the edges of all structural walls and the boundaries of all openings shall consist of twice the cross-sectional area of the minimum shear reinforcement required per lineal foot of wall. Horizontal extent of boundary element shall be in accordance with ~~ACI 318~~ Section 18.10.6.4 (a), (b) and (c).

1905A.13 ~~***1905A.1.11***~~ ***ACI 318, Section 18.12.6.*** *Add Section 18.12.6.2 to ACI 318 as follows:*

18.12.6.2 – Collector and boundary elements in topping slabs placed over precast floor and roof elements shall not be less than 3 inches (76 mm) or 6 d_b thick, where d_b is the diameter of the largest reinforcement in the topping slab.

1905A.14 ~~**1905.4**~~ **Foundations designed to resist earthquake forces.** Foundations resisting earthquake-induced forces or transferring earthquake- induced forces between a *structure* and the ground shall comply with the requirements of Section 18.13 of ACI 318 and other applicable provisions of ACI 318 unless modified by Chapter 18.

1905A.15 ~~***1905A.1.12***~~ ***ACI 318, Section 19.2.1.1 and Table 19.2.1.1.*** *Modify ACI 318, Section 19.2.1.1 and Table 19.2.1.1 as follows:*

19.2.1.1 The value of f'_c shall be in be in accordance with (a) through *(e)*:
(a) Limits for f'_c in Table 19.2.1.1. Limits apply to both normal weight and lightweight concrete.
(b) Durability requirements in Table 19.3.2.1.
(c) Structural strength requirements.
(d) *f´c* for lightweight concrete in special moment frames and special structural walls, and their
foundations, shall not exceed 5000 psi, unless demonstrated by experimental evidence that members made with lightweight concrete provide strength and toughness equal to or exceeding those of comparable members made with normal weight concrete of the same strength.
(e) Reinforced normal weight concrete with specified compressive strength higher than 8,000 psi (55 MPa) shall require prior approval of structural design method and acceptance criteria by the enforcement agency.

Table 19.2.1.1—Limits for f'c

APPLICATION	MINIMUM f_c', psi
General	*3000*
Special moment frames Special structural walls with Grade 60 or 80 reinforcement	3000
Special structural walls with Grade 100 reinforcement	5000
Precast-nonprestressed driven piles Drilled shafts	4000
Precast-prestressed driven piles	5000
Shotcrete	*4000*

~~***1905A.1.13 ACI 318, Table 21.2.2.*** *Replace Table 21.2.2 as follows:*~~

[Delete Table 21.2.2 in its entirety]

1905A.16 ~~***1905A.1.14***~~ ***ACI 318, Section 24.2.1.*** *Add Section 24.2.1.1 to ACI 318 as follows:*

24.2.1.1 – Span to depth ratio. Prestressed beam and slab span to depth ratios for continuous prestressed concrete members shall not exceed the following, except when

calculations of deflections and vibration effects prove that greater values may be used without adverse effects:

Beams..... 30
One-way slabs..... 40
Two-way floor slabs..... 40
Two-way roof slabs..... 44

These ratios should be decreased for special conditions such as heavy loads and simple spans.

Maximum deflection criteria shall be in accordance with ACI 318 Section 24.2.2.

1905A.17 ~~***1905A.1.15***~~ ***ACI 318, Section 25.2.10.*** *Replace ACI 318 Section 25.2.10 by the following:*

25.2.10 For ties and hoops in columns to be placed with shotcrete, minimum clear spacing shall be 3 in. *Shotcrete shall not be applied to spirally tied columns.*

1905A.18 ~~***1905A.1.16***~~ ***ACI 318, Section 26.5.2.*** *Modify ACI 318 Section 26.5.2.1 by replacing items (l), (m) and (n) and adding item (q) as follows:*

(l) Shotcrete surfaces intended to receive subsequent shotcrete placement *following an interruption of 30 minutes or more* shall be roughened to a full amplitude of approximately 1/4 in. before the shotcrete has reached final set. *The film of laitance which forms on the surface of the shotcrete shall be removed within approximately 2 hours after application by brushing with a stiff broom. If this film is not removed within 2 hours, it shall be removed by thorough wire brushing or a mechanical method acceptable to the enforcement agency.*
(m) Before placing additional material onto hardened shotcrete, laitance shall be removed, joints shall be cleaned, and the surface shall be dampened. *Construction joints over 8 hours old shall be thoroughly cleaned with air and water prior to receiving shotcrete.*
(n) In-place fresh concrete that exhibits sags, sloughs, segregation, honeycombing, sand pockets, or other obvious defects shall be removed and replaced. *Shotcrete above sags and sloughs shall be removed and replaced while still plastic.*
(q) Surface preparation: Concrete or masonry to receive shotcrete shall have the entire surface thoroughly cleaned and roughened by a mechanical method acceptable to the enforcement agency, and just prior to receiving shotcrete shall be thoroughly cleaned of all debris, dirt and dust. Concrete and masonry shall be brought to a saturated surface-dry (SSD) condition before shotcrete is deposited.

1905A.19 ACI 318, Section 26.11.1.2. *[Moved from Section 1908A.3] Modify ACI 318 Section 26.11.1.2 by adding item (e) as follows:*

(e) Forms for shotcrete shall be substantial and rigid. Forms shall be built and placed so as to permit the escape of air and rebound. Adequate ground wires, which are to be used as screeds, shall be placed to establish the thickness, surface planes and form of the shotcrete work. All surfaces shall be rodded to these wires.

1905A.20 ~~1905A.1.17~~ ACI 318, Section 26.12.2.1(a). *Replace ACI 318 Section 26.12.2.1(a) by the following:*

26.12.2.1(a) Samples for strength tests of each class of concrete placed each day shall be taken not less than once a day, or not less than once for each 50 cubic yards (345 m^3) of concrete, or not less than once for each 2,000 square feet (186 m2) of surface area for slabs or walls. Additional samples for 7-day compressive strength tests shall be taken for each class of concrete at the beginning of the concrete work or whenever the mix or aggregate is changed.

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SECTION 1906*A* – *RESERVED*

~~FOOTINGS FOR LIGHT-FRAME CONSTRUCTION~~

~~Not permitted by OSHPD and DSA-SS.~~

…

SECTION 1908*A* - SHOTCRETE

1908*A*.1 General. Shotcrete shall be in accordance with the requirements of ACI 318. *and the provisions of ACI 506R.*

[Moved from Section 1908A.2 below] Preconstruction tests of one or more shotcrete mockup panels prepared in accordance with Section 1705A.3.9.2 are required. In addition to testing requirements in ACI 318, special inspection and testing shall be in accordance with Section 1705A.3.9.

~~[OSHPD 1 & 4]~~ *The evaluation of the shotcrete mockup panel to qualify bar clearance dimensions in accordance with ACI 318 Section 25.2.7 or contact lap splices in accordance with ACI 318 Section 25.5.1.7 shall be in accordance with the requirements of ACI 506.4R with a core quality category of Very Good given in ACI 506.6T.*

[Moved to Section 1908A.1 above] ***~~1908A.2 Tests and inspections.~~*** *~~Preconstruction tests of one or more shotcrete mockup panels prepared in accordance with Section 1705A.3.9.2 are required. In addition to testing requirements in ACI 318, special inspection and testing shall be in accordance with Section 1705A.3.9.~~*

Shotcrete construction shall be in accordance with the requirements of ACI SPEC-506.2

[Moved to Section 1905A.19] ***~~1908A.3 Forms and ground wires for shotcrete.~~*** *~~Forms for shotcrete shall be substantial and rigid. Forms shall be built and placed so as to permit the escape of air and rebound.~~*

~~Adequate ground wires, which are to be used as screeds, shall be placed to establish the thickness, surface planes and form of the shotcrete work. All surfaces shall be rodded to these wires.~~

…

SECTION 1910A - CONCRETE, REINFORCEMENT AND ANCHOR TESTING

1910A.1 Cementitious material. *The concrete supplier shall furnish to the enforcement agency certification that the cement proposed for use on the project has been manufactured and tested in compliance with the requirements of ASTM C150 for portland cement and ASTM C595 or ASTM C1157 for blended hydraulic cement, whichever is applicable. When a mineral admixture or ground granulated blast-furnace slag is proposed for use, the concrete supplier shall furnish to the enforcement agency certification that they have been manufactured and tested in compliance with ASTM C618 or ASTM C989, whichever is applicable. The concrete producer shall provide copies of the cementitious material supplier's Certificate of Compliance that represents the materials used by date of shipment for concrete. Cementitious materials without Certification of Compliance shall not be used.*

…

1910A.5 Proof ~~T~~ tests for post-installed anchors in concrete. *When post-installed anchors are used in lieu of cast-in place bolts or reinforcing bars, the ~~installation verification~~ proof test loads, frequency, and acceptance criteria shall be in accordance with this section.*

> ***Exceptions.*** *Proof tests are not required for the following: [Moved from 1910A.5.3]*
>
> 1. *Undercut anchors that allow visual confirmation of full set.*
> 2. *Repetitively installed anchors (with 3 or more identical anchors) of diameter one-quarter (1/4)-in. or less used for distributed systems or architectural components.*
> 3. *Power actuated fasteners used to attach tracks of interior nonshear wall partitions for shear only, where there are at least three fasteners per segment of track.*
> 4. *Shear dowels across cold joints in slabs on grade, where the slab is not structural in accordance with Section 1907A.1.*

1910A.5.1 General. *Test loads or torques, test frequencies, and acceptance criteria shall be shown on the construction documents.*

If any anchor fails testing, all untested anchors of the same type and installed by the same trade shall be tested~~, which are installed by the same trade, not previously tested~~ until twenty (20) consecutive anchors pass, then resume the initial test frequency.

[Moved from below] Anchors to be tested shall be selected at random by the special inspector ~~/~~ or inspector of record (IOR), when 100 percent of the anchors are not tested.

The testing of the post-installed anchors shall be done in the presence of the special inspector and a report of the test results shall be submitted to the enforcement agency.

1910A.5.2 Proof ~~T~~ testing procedure. *~~The test procedure shall be as permitted by an approved evaluation report using criteria adopted in this code. All p~~ Post-installed anchors shall be tension tested~~. **[OSHPD 1 & 4]** Tension testing~~ to verify proper installation ~~shall be performed~~ in accordance with ASTM E3121 with test frequency and test loads in accordance with Sections 1910A.5.3 and 1910A.5.4 respectively.*

User Note: *Proof tests using ASTM E3121 tension test procedure do not require displacement measurement.*

> ***Exception:*** *Torque-controlled post-installed and screw type anchors shall be permitted to be tested using torque based on an approved evaluation report and ~~using~~ criteria adopted in this code.*

~~Alternatively, manufacturer's recommendation for testing may be approved by the enforcement agency, based on an approved test report using criteria adopted in this code.~~

1910A.5.3 Test frequency. *[Moved from below]*

> ***1910A.5.3.1 Structural Applications.*** *~~When~~100 percent of post-installed anchors ~~are~~ used for ~~other~~ structural applications~~, all such anchors~~ shall be proof tested.*
>
> *[Moved to exceptions below] ~~When post-installed anchors are used for sill plate bolting applications, 10 percent of the anchors shall be tested.~~*
>
> *[Moved above] ~~When post-installed anchors are used for other structural applications, all such anchors shall be tested.~~*
>
> *[Moved to nonstructural applications below] ~~When post-installed anchors are used for nonstructural components, such as equipment anchorage, 50 percent or alternate bolts in a group, including at least one-half the anchors in each group, shall be tested.~~*

Exceptions:

1. [Moved from main body of section above to exception] ***Sill bolts.*** *When post-installed anchors are used for sill plate or bottom track bolting applications, 10 percent of the anchors shall be tested.*

2. Rebar Dowels. *~~Where~~ When adhesive anchor systems are used to install reinforcing dowel bars in hardened concrete, ~~only~~ 25 percent of the dowels shall be tested if all of the following conditions are met:*

2.1 ~~a.~~ The dowels are used exclusively to transmit shear forces across joints between existing and new concrete.

2.2 ~~b.~~ The number of dowels in any one member equals or exceeds twelve (12).

2.3 ~~c.~~ The dowels are uniformly distributed across seismic force resisting members (such as shear walls, collectors and diaphragms).

[Moved to 1910A.5] ~~*Undercut anchors that allow visual confirmation of full set, shall not require testing*~~*.*

1910A.5.3.2 Nonstructural Applications. *50 percent of post-installed anchors used in nonstructural applications shall be proof tested. The percentage of tested anchors applies to each set of anchors of a common type (e.g. adhesive, wedge, or shell and sleeve for expansion bolts), size, and embedment depth and to each group of anchors. Four or more anchors connected to a common element shall be defined as a group.*

Exceptions:

1. ***Repetitive anchors.*** *When anchors are used repetitively (with 3 or more identical anchors) in distributed systems (such as pipe, duct or conduit supports) or architectural systems (such as suspended ceilings, cladding, and partitions) 20 percent of anchors, including at least one anchor in each group, shall be tested.*

   [Moved to 1910A.5] ~~*Testing is not required for power actuated fasteners used to attach tracks of interior nonshear wall partitions for shear only, where there are at least three fasteners per segment of track.*~~

2. ***Anchors with Low tension.*** *Where the design tension on anchors is less than 100 pounds and those anchors are clearly noted on the approved construction documents, ~~only~~ 10 percent of ~~those~~ anchors shall be tested.*

[Moved to structural applications above] ~~*Where adhesive anchor systems are used to install reinforcing dowel bars in hardened concrete, only 25 percent of the dowels shall be tested if all of the following conditions are met:*~~

~~*a. The dowels are used exclusively to transmit shear forces across joints between existing and new concrete.*~~

~~*b. The number of dowels in any one member equals or exceeds twelve (12).*~~

c. ~~*The dowels are uniformly distributed across seismic force resisting members (such as shear walls, collectors and diaphragms).*~~

[Moved to 1910A.5]~~***Shear dowels in slabs on grade.*** *Testing of Where shear dowels are used across cold joints in slabs on grade, where and the slab is not structural in accordance with Section 1907A.1, testing is part of the lateral force-resisting system shall not be required.*~~

[Moved to 1910A.5.1]~~*Anchors to be tested shall be selected at random by the special inspector / or inspector of record (IOR).*~~

~~*The testing of the post-installed anchors shall be done in the presence of the special inspector and a report of the test results shall be submitted to the enforcement agency.*~~

[Moved to 1910A.5] ~~*Testing is not required for power actuated fasteners used to attach tracks of interior nonshear wall partitions for shear only, where there are at least three fasteners per segment of track.*~~

3. ~~*6.*~~ ***[OSHPD 4]*** *In state detention and correctional facilities, tension testing is not required for post-installed anchors used for attaching nonstructural components, such as grab bars and shower seats, to concrete walls if the components do not contribute to security/detainment, life safety and the continuous operation of the institution following an event of extreme environmental loading from flood, wind, snow or earthquakes, as determined by the enforcing agency.*

1910A.5.4 Test loads. *Required test loads shall be determined by one of the following methods:*

1. *Twice the maximum allowable tension load or one and a quarter (1 1/4) times the maximum design strength of anchors as provided in an approved evaluation report using criteria adopted in this code or determined in accordance with Chapter 17 of ACI 318.*

   Tension test load need not exceed 80 percent of the nominal yield strength of the anchor element (= 0.8 A_{se} f_{ya}).

2. *The manufacturer's recommended installation torque based on an approved evaluation report using criteria adopted in this code.*

1910A.5.5 Test acceptance criteria. *~~Acceptance criteria for post-installed anchors shall be based on an approved evaluation report using criteria adopted in this code.~~ ~~Field~~ Proof tests shall satisfy the following minimum requirements.*

*1. **Tension test:** ~~Hydraulic ram method:~~ Anchors shall be tested in the unconfined condition in accordance ASTM E3121 except that the minimum clearance to the test frame shall be 1.5 times the anchor's embedment depth. ~~tested with a hydraulic jack or spring loaded apparatus shall maintain the t~~ Test load shall be maintained for a minimum of 15 seconds and shall exhibit no discernible movement during the tension test, e.g., as evidenced by loosening of the washer under the nut or an abrupt decrease in the gauge pressure. ~~The testing apparatus support locations shall not be within 1.5 times the anchor's embedment depth to avoid restricting the concrete shear cone type failure mechanism from occurring.~~*

Exception: *~~When denoted accordingly on the approved construction documents, adhesive anchors complying with ACI 318 Equation 17.8.2a and for which concrete breakout does not control the design tensile strength may be tested with apparatus support locations closer than 1.5 times the anchor embedment depth.~~ Adhesive anchors shall be permitted to be tested in confined conditions in accordance with ASTM E3121 when the approved construction documents indicate that concrete breakout does not control the design tensile strength.*

*2. **Torque test:** ~~wrench method:~~ Torque-controlled post-installed anchors tested with a calibrated torque wrench shall attain the specified torque within 1/2 turn of the nut; or one quarter (1/4) turn of the nut for a 3/8-inch sleeve anchor only.*

Exception: *Screw-type anchors tested with a calibrated torque wrench shall attain the specified torque within one-quarter (1/4) turn of the screw after initial seating of the screw head.*

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SECTION 1911A
EXISTING CONCRETE STRUCTURES

1911A.1 Existing concrete structures.

The structural use of existing concrete with a core strength less than 1,500 psi (10.3MPa) is not permitted in rehabilitation work.

For existing concrete structures, sufficient cores shall be taken at representative locations throughout the structure, as designated by the architect or structural engineer, so that knowledge will be had of the in-place strength of the concrete. At least three cores shall be taken from each building for each 4,000 square feet (372 m2) of floor area, or fraction thereof. Cores shall be at least 4 inches (102 mm) in diameter. Cores as small as 2.75 inches (70 mm) in diameter may be allowed by the enforcement agency when reinforcement is closely spaced and the coarse aggregate does not exceed ¾ inch (19 mm).

1911A.2 Crack repair by epoxy injection. *Crack repair of concrete and masonry member by epoxy injection, shall conform to all requirements of ACI ~~503.7~~ SPEC-548.15.*

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 20
ALUMINUM

SECTION 2001 – GENERAL

2001.1 Scope. This chapter shall govern the quality, design, fabrication and erection of aluminum.

2001.1.1 Application. [OSHPD] *The scope of application of Chapter 20 is as follows:*

1. Applications listed in Sections 1.10.1, 1.10.2, 1.10.4, and 1.10.5 and regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD). These applications include hospitals, hospital buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility buildings, correctional treatment centers and acute psychiatric hospital buildings.

2. Reserved for DSA-SS.

2001.1.2 Amendments in this chapter. [OSHPD] *OSHPD adopt this chapter as amended. ~~and all amendments~~.*

Exception: *Amendments adopted by OSHPD ~~only one agency~~ appears in this chapter preceded with the appropriate acronym of the adopting agency, as follows:*

*1. **[OSHPD 1, 1R, 2, 4 & 5]** Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD) amendments appear in this chapter preceded with the appropriate acronym, as follows:*

***[OSHPD 1]** - For applications listed in Section 1.10.1.*
***[OSHPD 1R]** - For applications listed in Section 1.10.1.*
***[OSHPD 2]** - For applications listed in Section 1.10.2.*
***[OSHPD 4]** - For applications listed in Section 1.10.4.*
***[OSHPD 5]** - For applications listed in Section 1.10.5.*

2. Reserved for DSA-SS.

2001.1.3 Reference to other chapters.
***2001.1.3.1 [OSHPD 1 & 4]** Where reference within this chapter is made to sections in Chapters 16, 17, 18, 19, 21 and 22, the provisions in Chapters 16A, 17A, 18A, 19A, 21A and 22A, respectively shall apply instead.*

…

SECTION 2003 - TESTING AND INSPECTION
[OSHPD 1, 1R, 2, 4 & 5]

***2003.1 Testing and Inspection. ~~[OSHPD 1 & 4]~~** Testing and inspection of aluminum shall be required in accordance with the requirements for steel in Chapter 17~~A~~, except references to AWS D1.1 shall be to AWS D1.2.*

***~~[OSHPD 1R, 2 & 5,]~~** ~~Testing and inspection of aluminum shall be required in accordance with the requirements for steel in Chapter 17, except references to AWS D1.1 shall be to AWS D1.2.~~*

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 21
MASONRY

SECTION 2101 – GENERAL

2101.1 Scope. This chapter shall govern the materials, design, construction and quality of *masonry*.

2101.1.1 Application. [OSHPD 1R, 2 & 5] *The scope of application of Chapter 21 is as follows:*

1. *Reserved for DSA-SS.*
2. *Structures regulated by the Office of Statewide ~~health~~ Hospital planning and development (OSHPD)~~.~~, which include hospital ~~B~~ buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility buildings and acute psychiatric hospital buildings, ~~regulated by OSHPD. Applications~~ listed in Sections 1.10.1, 1.10.2 and 1.10.5.*

2101.1.2 Amendments in this chapter. [OSHPD 1R, 2 & 5] *OSHPD adopt this chapter ~~and all amendments.~~ as amended.*

~~Exception:~~ *~~Amendments adopted by only one agency appear in this chapter preceded with the acronym of the adopting agency, as follows:~~*

2101.1.3 Identification of amendments.

1. Reserved for DSA-SS.
2. ***[OSHPD 1R, 2 & 5]*** *Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD) amendments appear in this chapter preceded by the appropriate acronym, as follows:*

[OSHPD 1R] *- For applications listed in Section 1.10.1.*
[OSHPD 2] *- For applications listed in Section 1.10.2.*
[OSHPD 5] *- For applications listed in Section 1.10.5.*

…

2101.2.2 Prohibition. [OSHPD 1R, 2 & 5] *The following design methods, systems and materials in TMS402/602 are not permitted by OSHPD:*

1. Unreinforced masonry.
2. Autoclaved Aerated Concrete (AAC) Masonry.
3. Empirical design of masonry and prescriptive design of masonry partition walls.
4. Adobe construction.
5. Ordinary reinforced masonry shear walls.
6. Intermediate reinforced masonry shear walls.
7. Prestressed masonry shear walls.
8. Direct design of masonry.
9. Design of masonry infills (TMS 402 Chapter 12)
10. Prescriptive design of masonry partitions walls (TMS 402 Chapter 15)

…

SECTION 2103 - MASONRY CONSTRUCTION MATERIALS

2103.1 Masonry units. Concrete *masonry units*, clay or shale *masonry units*, stone *masonry units*, and *glass unit masonry* shall comply with Article 2.3 of TMS 602. Architectural *cast stone* shall conform to TMS 504. ***[OSHPD 1R, 2 & 5]*** *Architectural cast stone construction shall be considered as an alternative system.*

…

2103.6 Specified compressive strength of Masonry and Grout. [OSHPD 1R, 2 & 5]
Replace TMS Table 4.3.1 by the following:

Table 4.3.1 Specified Compressive Strength Requirements

Type of Masonry	***Specified compressive strength of masonry***	***Specified compressive strength of grout***
Concrete masonry	*2,000 psi (13.79 MPa) ≤ f'_m ≤ 3,000 psi (20.68 MPa)*	*$f'_g \geq f'_m \leq$ 5,000 psi (34.47 MPa)*
Clay masonry	*1,500 psi (10.34 MPa) ≤ f'_m ≤ 4,500 psi (31.02 MPa)*	*$f'_g \leq$ 6,000 (41.37 MPa)*

SECTION 2104—CONSTRUCTION

2104.1 Masonry construction. *Masonry* construction shall comply with the requirements of Sections 2104.1.1 and 2104.1.2 and with the requirements of either TMS 602 or TMS 604.
…

2104.2 Reinforced Grouted masonry. [OSHPD 1R, 2 & 5]

…

2104.2.2 TMS 602, Article 3.4 B Reinforcement. *Modify TMS 602, Article 3.4 B.1 ~~and~~ through Article 3.4 B.3 as follows:*
1. Support reinforcement to prevent displacement caused by construction loads or by placement of grout or mortar~~, beyond the allowable tolerances~~. *Reinforcement and embedded items shall be clean, properly positioned and securely anchored against moving prior to grouting.*

2. Completely embed reinforcing bars and embedded items in grout in accordance with Article 3.5.

3. Maintain a clear distance between reinforcing bars and the interior of masonry unit or formed surface of at least 1/4 inch (6.4 mm) for fine grout and 1/2 inch (12.7 mm) for coarse grout, *and ~~the space between masonry unit surfaces and reinforcement shall be~~ a minimum of one bar diameter,* except where cross webs of hollow units are used as supports for horizontal reinforcement. ~~*Reinforcement and embedded items shall be solidly embedded in grout.*~~

…

2104.2.3 TMS 602, Article ~~3.4 D~~ 3.4 E Anchor bolts. *Replace TMS 602, Article ~~3.4 D.3~~ 3.4 E.3 and add Articles ~~3.4 D.5~~ 3.4 E.5 and ~~3.4 D.6~~ 3.4 E.6 as follows:*

3. *Anchor bolts in the wythe or face shells of hollow masonry units shall be positioned to maintain a minimum of 1/2 inch (12.7 mm) of grout between the bolt circumference, the wythe or the face shell. For the portion of the bolt that is within the grouted cell, maintain a clear distance between the bolt and the face of masonry unit and between the head of the bolt and the formed surface of grout of at least ¼ inch (6.4 mm) when using fine grout and at least ½ inch (12.7 mm) when using coarse grout. Bolts shall be solidly embedded in grout.*

5. Bent bar anchor bolts shall not be allowed. The maximum size anchor shall be 1/2-inch (12.7 ~~13~~ mm) diameter for 6-inch (152 mm) nominal masonry, 3/4-inch (19.1 ~~19~~ mm) diameter for 8-inch (203 mm) nominal masonry, 7/8-inch (22.2 ~~22~~ mm) diameter for 10-inch (254 mm) nominal masonry, and 1-inch (25.4 ~~25~~ mm) diameter for 12-inch (305 ~~304.8~~ mm) nominal masonry.

6. Bolts shall be accurately set with templates or by approved equivalent means and held in place to prevent dislocation during grouting.

2104.2.4 TMS 602, Article 3.5 C Grout pour height. *~~Add to~~ Replace TMS 602, Article 3.5 C by the following:*

Do not exceed the grout pour height given in modified TMS 602 Table 7 below:

1. ~~For grout pours not greater than 4 feet (1219 mm) or 5 feet 4 inches (1651 mm) for 10-inch (254 mm) nominal or wider hollow unit masonry, the~~ The top of grout pour shall be at the top ~~of constructed masonry, or within 8 inches (200 mm) of the top~~ of the constructed masonry. Grout pours not terminated at the top of constructed masonry shall comply with TMS 602, Articles ~~3.5 C.3.a~~ 3.5 C.2.a through ~~3.5 C.3.e~~ 3.5 C.2.c. ~~After construction of each grout lift height of wall, column, pier or beam, masonry cells or cavities shall be inspected prior to placement of grout.~~

2. Grout pours height of hollow unit masonry exceeding ~~in excess of~~ 4 feet (1219 mm) or 5 feet 4 inches (1651 mm) for 10-inch (254 mm) nominal or wider ~~hollow unit masonry~~ shall be subject to approval of the enforcement agency~~. a. Grout pours in excess of 4 feet (1219 mm) or 5 feet 4 inches (1651 mm) for 10-inch (254 mm) nominal or wider hollow unit masonry shall be subject to~~ and the following:

a. Grouting shall be done in a continuous pour in lifts not exceeding ~~4 feet (1219 mm) or 5 feet 4 inches (1651 mm) for 10-inch (254 mm) nominal or wider hollow unit masonry~~ the requirements of TMS 602, Article 3.5 D.
~~b. An approved admixture of a type that reduces early water loss and produces an expansive action shall be used.~~
b. ~~c.~~ The grouting of any section of wall shall be completed in one day with no interruptions greater than one hour.
~~d. For multiple grout lifts within a grout pour, each grout lift height of wall, column, pier or beam shall be inspected before placement of additional units.~~
c. ~~e.~~ Cleanout openings shall be provided at the bottom of each pour of grout.

Table 7: Grout Space Requirements

Grout Type[1]	*Maximum grout pour height, ft*	*Minimum clear width of grout space,[2,3] in.*	*Minimum clear grout space dimensions for grouting cells of hollow units,[3] in. x in.*
Coarse	*1*	*2 ½*	*1½ x 3*
Coarse	*4[4]*	*2 ½*	*2 ½ x 3*
Coarse	*12.67*	*3 ½*	*3 x 3*

[1] Coarse grouts are defined in ASTM C476.

[2] For grouting between masonry wythes.

[3] Minimum clear width of grout space and minimum clear grout space dimension are the net dimension of the space determined by subtracting masonry protrusions and the diameters of horizontal reinforcement from the as-built cross section of the grout space. Select the grout type and maximum grout pour height based on the minimum clear space.

[4] Maximum pour height can be increased to 5.33 feet for walls with a nominal thickness of 10 inches or more.

2104.2.5 TMS 602, Article 3.5 F.1 Grout key. *Replace TMS 602, Article 3.5 F.1 as follows:*

1. Between grout pours or where grouting has been stopped more than an hour, a horizontal construction joint shall be formed by terminating grout a minimum of 1 ½ inches (38.1 ~~38~~ mm) and a maximum of one-half the masonry unit height below a mortar joint, except at the top of the wall. Where bond beams occur, the grout pour shall be terminated a minimum of ½ inch (12.7 mm) below the mortar joint. Horizontal reinforcement shall be placed in bond beam units with a minimum grout cover of 1 inch (25 mm) above reinforcing steel for each grout pour.

…

SECTION 2105 - QUALITY ASSURANCE

2105.1 General. A quality assurance program shall be used to ensure that the constructed *masonry* is in compliance with the *approved construction documents*.

The quality assurance program shall comply with the inspection and testing requirements of Chapter 17 and TMS 602.

2105.2 Compressive strength, f '$_m$. [OSHPD 1R, 2 & 5] *~~The minimum specified compressive strength, f'$_m$, in the design shall be 1,500 psi (10.34 MPa) for all structural masonry construction using materials and details of construction required herein.~~ Testing of masonry shall be provided in accordance with TMS 602, Article 1.4 B.*

Exception: *Where values of f 'm greater than 2000 psi (13.79 MPa) are used in the design of reinforced grouted multi-wythe masonry and reinforced hollow-unit masonry, they shall be based on prism test results in accordance with TMS 602, Article 1.4 B.3 submitted by the architect or engineer to the enforcement agency which demonstrate the ability of the proposed construction to meet prescribed performance criteria for strength.*

The architect or structural engineer shall establish a method of quality control of the masonry construction acceptable to the enforcement agency which shall be described in the contract documents. Verification of compliance with the requirements for the specified strength of masonry during construction shall be provided using prism test method in accordance with TMS 602, Article 1.4 B.3. Verification of compliance with the specified compressive strength prior to the start of construction shall be obtained by using the prism test method in accordance with TMS 602, Article 1.4 B.3.

2105.3 Mortar and grout tests. TMS 602, Article 1.4 B Compressive Strength Determination. [OSHPD 1R, 2 & 5] *Modify TMS 602, Article 1.4 B as follows by adding:*

5. Additional testing requirements:

a. At the beginning of all masonry work, at least one test sample of the mortar shall be taken on 3 successive working days and at least at 1-week

intervals thereafter. Where mortar is based on a proportion specification, mortar shall be sampled and tested during construction in accordance with ASTM C780, including Annex 4, to verify the proportions specified in ASTM C270, Table 2. Where mortar is based on a property specification, mortar shall be laboratory prepared and tested prior to construction in accordance with ASTM C780 to verify the properties specified in ASTM C270, Table 1 and field sampled and tested during construction in accordance with ASTM C780 to verify the proportions with the laboratory tests. Mortar sampling and testing is not required for preblended mortars in conformance with ASTM C1714 with a material certificate.

b. Samples of grout shall be taken for each mix design, each day grout is placed, and not less than every 5,000 square feet of masonry wall area. They shall meet the minimum strength requirement given in ASTM C476/TMS 602, Section 2.2, or greater as specified.

c. Additional samples shall be taken whenever any change in materials or job conditions occur, as determined by the building official.

d. Test specimens for mortar and grout shall be made as set forth in ASTM C780/C1586 and ASTM C1019. When the prism test method is used in accordance with TMS 602, Article 1.4 B.3 during construction, the tests in this section are not required.

***Exception:** For nonbearing non-shear masonry walls not exceeding total wall height of 12 feet above top of foundation, mortar tests shall be permitted to be limited to those at the beginning of masonry work for each mix design.*

…

SECTION 2106—SEISMIC DESIGN

2106.1 Seismic design requirements for masonry. Masonry *structures* and components shall comply with the requirements in Chapter 7 of TMS 402 depending on the *structure's seismic design category*.

…

2106.1.1 TMS 402, ~~Sections 5.3.1.4(a)~~ Section 5.4.1.4. ~~and 5.3.1.4(b).~~

*~~Replace~~ **[OSHPD 1R, 2 & 5]** Modify TMS 402, ~~Sections 5.3.1.4(a)~~ Section 5.4.1.4 Items #a, b, d & e ~~and 5.3.1.4(b)~~ as follows:*

a. Vertical reinforcement shall be enclosed by lateral ties at least $^3/_8$ (9.5 mm) in diameter. ~~Ties shall be at least 3/8 inch (10 mm) in diameter and shall be embedded in grout. Top tie shall be within 2 inches (51 mm) of the top of the column or of the bottom of the horizontal bar in the supported beam.~~

b. Vertical spacing of lateral ties, over the full height of the column, shall not exceed 8 longitudinal bar diameters, 24 lateral tie bar diameters, 8

inches (203 mm),or one-half the least cross sectional dimension of the member. ~~The spacing of column ties shall be as follows: not greater than 8 bar diameters, 24 tie diameters, or one half the least dimension of the column, or 8 inches (203 mm) for the full column height.~~

d. Lateral ties shall be embedded in grout.

e. Lateral ties shall be located vertically not more than one-half lateral tie spacing above the top of the footing or slab in any story, and shall be spaced not more than one-half a lateral tie spacing nor 2 inches (50.8 mm) below the lowest horizontal reinforcement in beam, girder, slab, or drop panel above. For columns, top tie shall be within 2 inches (51 mm) of the top of the column.

***2106.1.2 [~~OSHPD 1R, 2 & 5~~] TMS 402, Chapter 5. [OSHPD 1R, 2 & 5]** Add TMS 402, Section ~~5.6~~ 5.7 as follows:*

5.7 ~~5.6~~ – Lateral Support of Members

*5.7.1 ~~5.6.1~~ **–** Lateral support of masonry may be provided by cross walls, columns, pilasters, counterforts or buttresses where spanning horizontally, or by floors, beams, girts or roofs where spanning vertically. Where walls are supported laterally by vertical elements, the stiffness of each vertical element shall exceed that of the tributary area of the wall.*

***2106A.1.3 TMS 402, Sections 7.4.4.1 and 7.4.5.1.** Replace TMS 402, Section 7.4.4.1 as follows and delete Section 7.4.5.1:*

***7.4.4.1 Minimum reinforcement requirements for masonry walls.** The total area of reinforcement in reinforced masonry walls shall not be less than 0.003 times the sectional area of the wall. Neither the horizontal nor the vertical reinforcement shall be less than one third of the total. Horizontal and vertical reinforcement shall be spaced at not more than 24 inches (610 mm) center to center. Where stack bond is used in reinforced hollow-unit masonry, the open-end type of unit shall be used with vertical reinforcement spaced a maximum of 16 inches (406 mm) on center.*

***Exception:** Reinforced hollow-unit masonry used for freestanding site walls or interior nonbearing nonshear wall partitions shall have horizontal reinforcing spaced not more than ~~4'-0"~~ 4 feet (1.2 m) on center, except for locations in Seismic Design Category F, and may be grouted only in cells containing vertical and horizontal reinforcement.*

***7.4.4.1.1** The minimum reinforcing shall be No. 4, except that No. 3 bars may be used for ties and stirrups. Vertical wall reinforcement shall have dowels of equal size and equally matched spacing in all footings. Reinforcement shall be continuous around wall corners and through intersections. Only reinforcement which is continuous in the wall shall be considered in computing the minimum area of reinforcement. Reinforcement with splices conforming to TMS 402 shall be considered as continuous reinforcement.*

***7.4.4.1.2** Horizontal reinforcing bars in bond beams shall be provided in the top of footings, at the top of wall openings, at roof and floor levels, and at the top of parapet walls. For walls 12 inches (nominal) (305 mm) or*

more in thickness, horizontal and vertical reinforcement shall be equally divided into two layers, except where designed as retaining walls. Where reinforcement is added above the minimum requirements, such additional reinforcement need not be so divided.

7.4.4.1.3 *In bearing walls of every type of reinforced masonry, there shall be trim reinforcement of not less than one No. 5 bar or two No. 4 bars on all sides of, and adjacent to, every opening which exceeds 16 inches (406 mm) in either direction, and such bars shall extend not less than 48 diameters, but in no case less than 24 inches (610 mm) beyond the corners of the opening. The bars required by this paragraph shall be in addition to the minimum reinforcement required elsewhere.*

7.4.4.1.4 *When the reinforcement in bearing walls is designed, placed and anchored in position as for columns, the allowable stresses shall be as for columns.*

7.4.4.1.5 *Joint reinforcement shall not be used as principal reinforcement in masonry.*

…

SECTION 2107—ALLOWABLE STRESS DESIGN

2107.1 General. The design of *masonry structures* using *allowable stress design* shall comply with Section 2106 and the requirements of Chapters 1 through 8 of TMS 402 except as modified by Sections 2107.2 through 2107.3. ***[OSHPD 1R, 2 & 5]*** *through 2107.7.*

…

2107.4 <u>Reserved.</u> ~~[OSHPD 1R, 2 & 5] TMS 402, Section 8.3.7, maximum bar size. [OSHPD 1R, 2 & 5] *~~Add the following to Chapter 8:*

~~8.3.7 – Maximum bar size. The maximum bar diameter shall conform to the requirements of TMS 402, Section 9.3.3.1.~~

…

2107.6 [OSHPD 1R, 2 & 5] Modify TMS 402, Section 8.3.4.4 by the following:
Reinforced masonry walls, columns, pilasters, beams and lintels that are subjected to in-plane forces shall have a maximum flexural tensile reinforcement ratio, ρ_{max} , not greater than that computed by Equation ~~8-20~~ <u>8-18</u>.

~~2107.7 Masonry Compressive Strength. [OSHPD 1R, 2 & 5]~~ *~~The specified compressive strength of structural masonry, f'_m , shall be equal to or exceed 1,500 psi (10.34 MPa). The value of f'_m used to determine nominal strength value in this chapter shall not exceed 3,000 psi (20.7 MPa) for concrete masonry and shall not exceed 4,500 psi (31.03 MPa) for clay masonry.~~*

…

SECTION 2108—STRENGTH DESIGN OF MASONRY

2108.1 General. The design of *masonry structures* using strength design shall comply with Section 2106 and the requirements of Chapters 1 through 7 and Chapter 9 of TMS 402, except as modified by Sections 2108.2 through 2108.*4*.

…

~~***2108.4 [OSHPD 1R, 2 & 5] TMS 402, Section 9.1.9.1.1.*** *Modify TMS 402, Section 9.1.9.1.1 as follows:~~

~~**9.1.9.1.1** Masonry Compressive Strength. The specified compressive strength of *structural* masonry, *f 'm*, shall be equal to or exceed 1,500 psi (10.34 MPa). The value of *f 'm* used to determine nominal strength values in this chapter shall not exceed *3,000 psi (20.7 MPa)* for concrete masonry and shall not exceed *4,500* psi (*31.03* MPa) for clay masonry.~~

2108.4 Masonry Compressive Strength. [OSHPD 1R, 2 & 5] *The specified compressive strength of structural masonry, f'_m, shall be equal to or exceed 1,500 psi (10.34 MPa). The value of f'_m used to determine nominal strength value in this chapter shall not exceed 3,000 psi (20.7 MPa) for concrete masonry and shall not exceed 4,500 psi (31.03 MPa) for clay masonry.*

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 21*A*
MASONRY

SECTION 2101*A*- GENERAL

2101*A*.1 Scope. This chapter shall govern the materials, design, construction and quality of *masonry*.

2101A.1.1 Application. *The scope of application of Chapter 21A is as follows:*

1. Reserved for DSA-SS.

2. Applications listed in Sections 1.10.1 and 1.10.4 regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD). These applications include hospitals and correctional treatment centers.

…

2101A.1.3 Prohibition. *The following design methods, systems and materials in TMS 402/602 are not permitted by DSA-SS and OSHPD:*
1. Unreinforced masonry.
2. Autoclaved aerated concrete (AAC) masonry.
3. Empirical design of masonry and prescriptive design of masonry partition walls.
4. Adobe construction.
5. Ordinary reinforced masonry shear walls.
6. Intermediate reinforced masonry shear walls.
7. Prestressed masonry shear walls.
8. Direct design of masonry
9. Design of masonry infills (TMS 402 Chapter 12)
10. Prescriptive design of masonry partitions walls (TMS 402 Chapter 15)
…

SECTION 2103*A* - MASONRY CONSTRUCTION MATERIALS

2103*A*.1 Masonry units. Concrete *masonry units*, clay or shale *masonry units*, stone *masonry units*, and *glass unit masonry* shall comply with Article 2.3 of TMS 602. Architectural *cast stone* shall conform to TMS 504. *Architectural cast stone construction shall be considered as an alternative system.*

…

2103*A*.3 Grout. Grout shall comply with Article 2.2 of TMS 602.

2103A.3.1 Aggregate. *Coarse grout shall be used in grout spaces between wythes of 2 inches (~~51~~ 50.8 mm) or more in width as determined in accordance with TMS 602 Table ~~6~~ 7, footnote 3, and in all grouted cells of hollow unit masonry construction.*

…

2103A.6 Specified compressive strength of Masonry and Grout. [OSHPD 1R, 2 & 5] *Replace TMS Table 4.3.1 by the following:*

Table 4.3.1 Specified Compressive Strength Requirements

Type of Masonry	***Specified compressive strength of masonry***	***Specified compressive strength of grout***

Concrete masonry	*2,000 psi (13.79 MPa) ≤ f'_m ≤ 3,000 psi (20.68 MPa)*	*$f'_g \geq f'_m \leq$ 5,000 psi (34.47 MPa)*
Clay masonry	*1,500 psi (10.34 MPa) ≤ f'_m ≤ 4,500 psi (31.02 MPa)*	*$f'_g \leq$ 6,000 (41.37 MPa)*

SECTION 2104*A* —CONSTRUCTION

2104*A*.1 Masonry construction. *Masonry* construction shall comply with the requirements of Sections 2104*A*.1.1 *through* 2104*A*.1.3 and with the requirements of either TMS 602 or TMS 604.

…

2104A.1.3 Reinforced grouted masonry.

…

2104A.1.3.3 TMS 602, Article 3.4 B Reinforcement. *Modify TMS 602, Article 3.4 B.1 ~~and~~ through Article 3.4 B.3 as follows:*

1. Support reinforcement to prevent displacement caused by construction loads or by placement of grout or mortar~~, beyond the allowable tolerances~~. *Reinforcement and embedded items shall be clean, properly positioned and securely anchored against moving prior to grouting.*

2. Completely embed reinforcing bars and embedded items in grout in accordance with Article 3.5.

3. Maintain a clear distance between reinforcing bars and the interior of masonry unit or formed surface of at least 1/4 inch (6.4 mm) for fine grout and 1/2 inch (12.7 mm) for coarse grout, *and ~~the space between masonry unit surfaces and reinforcement shall be~~ a minimum of one bar diameter,* except where cross webs of hollow units are used as supports for horizontal reinforcement. ~~*Reinforcement and embedded items shall be solidly embedded in grout.*~~

2104A.1.3.4 TMS 602, Article ~~3.4 D~~ 3.4 E Anchor bolts. *Replace TMS 602, Article ~~3.4 D.3~~ 3.4 E.3 and add Articles ~~3.4 D.5~~ 3.4 E.5 and 3.4 E.6 ~~3.4 D.6~~ as follows:*

> 3. *Anchor bolts in the wythe or face shells of hollow masonry units shall be positioned to maintain a minimum of 1/2 inch (12.7 mm) of grout between the bolt*

circumference, the wythe or the face shell. For the portion of the bolt that is within the grouted cell, maintain a clear distance between the bolt and the face of masonry unit and between the head of the bolt and the formed surface of grout of at least 1/4 inch (6.4 mm) when using fine grout and at least 1/2 inch (12.7 mm) when using coarse grout. Bolts shall be solidly embedded in grout.

5. Bent bar anchor bolts shall not be allowed. The maximum size anchor shall be 1/2-inch (~~13~~ 12.7 mm) diameter for 6-inch (152 mm) nominal masonry, 3/4-inch (19.1 ~~19~~ mm) diameter for 8-inch (203 mm) nominal masonry, 7/8-inch (22 mm) diameter for 10-inch (254 mm) nominal masonry, and 1-inch (25.4 ~~25~~ mm) diameter for 12-inch (305 ~~304.8~~ mm) nominal masonry.

6. Bolts shall be accurately set with templates or by approved equivalent means and held in place to prevent dislocation during grouting.

2104A.1.3.5 TMS 602, Article 3.5 C Grout pour height. *~~Add to~~ Replace TMS 602, Article 3.5 C by the following:*

Do not exceed the grout pour height given in modified TMS 602 Table 7 below:

*1. ~~For grout pours not greater than 4 feet (1219 mm) or 5 feet 4 inches (1651 mm) for 10-inch (254 mm) nominal or wider hollow unit masonry, the~~ The top of grout pour shall be at the top ~~of constructed masonry, or within 8 inches (200 mm) of the top of~~ the constructed masonry. Grout pours not terminated at the top of constructed masonry shall comply with TMS 602, Articles ~~3.5 C.3.a~~ 3.5 C.2.a through ~~3.5 C.3.e~~ 3.5 C.2.c. **~~[OSHPD 1 & 4]~~** ~~After construction of each grout lift height of wall, column, pier or beam, masonry cells or cavities shall be inspected prior to placement of grout.~~*

2. Grout pours ~~in excess of~~ height of hollow unit masonry exceeding ~~in excess of~~ 4 feet (1219 mm) or 5 feet 4 inches (1651 mm) for 10-inch (254 mm) nominal or wider ~~hollow unit masonry~~ shall be subject to approval of the enforcement agency~~. 3. Grout pours in excess of 4 feet (1219 mm) or 5 feet 4 inches (1651 mm) for 10-inch (254 mm) nominal or wider hollow unit masonry shall be subject to~~ and the following:

a. Grouting shall be done in a continuous pour in lifts not exceeding ~~4 feet (1219 mm) or 5 feet 4 inches (1651 mm) for 10-inch (254 mm) nominal or wider hollow unit masonry~~ the requirements of TMS 602, Article 3.5 D.

~~b. An approved admixture of a type that reduces early water loss and produces an expansive action shall be used.~~

b. ~~c.~~ The grouting of any section of wall shall be completed in one day with no interruptions greater than one hour.

~~d. For multiple grout lifts within a grout pour, each grout lift height of wall, column, pier or beam shall be inspected before placement of additional units.~~

c. ~~e.~~ Cleanout openings shall be provided at the bottom of each pour of grout.

Table 7: Grout Space Requirements

Grout Type[1]	*Maximum grout pour height, ft*	*Minimum clear width of grout space,[2,3] in.*	*Minimum clear grout space dimensions for grouting cells of hollow units,[3] in. x in.*
Coarse	*1*	*2 ½*	*1½ x 3*
Coarse	*4[4]*	*2 ½*	*2 ½ x 3*
Coarse	*12.67*	*3 ½*	*3 x 3*

[1] Coarse grouts are defined in ASTM C476.

[2] For grouting between masonry wythes.

[3] Minimum clear width of grout space and minimum clear grout space dimension are the net dimension of the space determined by subtracting masonry protrusions and the diameters of horizontal reinforcement from the as-built cross section of the grout space. Select the grout type and maximum grout pour height based on the minimum clear space.

[4] Maximum pour height can be increased to 5.33 feet for walls with a nominal thickness of 10 inches or more.

2104A.1.3.6 TMS 602, Article 3.5 D Grout lift height. *~~Modify~~ Replace TMS 602, Article 3.5 D ~~as follows~~ by the following:*

~~3. In no case shall Grout~~ lifts shall not exceed 4 feet (1219 mm) in height.

> ***Exception:*** *The 4 feet (1219 mm) maximum lift height may be increased to 5 feet 4 inches (1.63 m 1~~625.6 mm~~) for 10-inch (254 mm) nominal and wider hollow-unit masonry.*

~~2104A.1.3.7 TMS 602, Article 3.5 E Consolidation.~~ *~~Modify TMS 602, Article 3.5 E.1.b as follows:~~*

~~b. Consolidate pours exceeding 12 inch (305 mm) in height by mechanical vibration, and reconsolidate by mechanical vibration after initial water loss and settlement has occurred, *but before plasticity is lost.*~~

2104A.1.3.7 ~~2104A.1.3.8~~ TMS 602, Article 3.5 F.1 Grout key. *Replace TMS 602, Article 3.5 F.1 as follows:*

> *1. Between grout pours or where grouting has been stopped more than an hour, a horizontal construction joint shall be formed by terminating grout a minimum of 1 ½ inches (38.1 ~~38~~ mm) and a maximum of one-half the masonry unit height below a mortar joint, except at the top of the wall. Where bond beams occur, the grout pour shall be terminated a minimum of 1/2 inch (12.7 mm) below the mortar joint. Horizontal reinforcement shall be placed in bond beam units with a*

minimum grout cover of 1 inch (25 mm) above reinforcing steel for each grout pour.

2104A.1.3.9 TMS 602, Article 3.5 Grout placement. *Add the following to TMS 602, Article 3.5:*

3.5 I. *Additional grouting requirements:*

1. Place grout ~~Grout shall be placed~~ by pumping or an approved alternate method prior to ~~before~~ initial set ~~of hardening occurs~~ and loss of plasticity.

2. Place grout ~~Grout shall be placed~~ so that all spaces to be grouted do not contain voids.

3. Grout shall not be handled nor pumped utilizing aluminum equipment unless it can be demonstrated with the materials and equipment to be used that there will be no deleterious effect on the strength of the grout.

…

2104A.1.3.10 Reinforced grouted multi-wythe masonry.

2104A.1.3.10.1 General. *Reinforced grouted multi-wythe masonry is that form of composite construction made with clay or shale brick or made with solid concrete building brick in which interior spaces of masonry are filled by pouring grout around reinforcement therein as the work progresses.*

2104A.1.3.10.2 TMS 402, Section 5.1.3.2.1. *Replace TMS 402, Section 5.1.3.2.1 by the following:*

5.1.3.2.1 Multiwythe masonry designed for composite action shall have wythes connected by collar joints and wall ties.

~~Section 5.1.4.2.2 Masonry headers.~~ *~~Replace TMS 402, Section 5.1.4.2.2 as follows:~~*

~~5.1.4.2.2~~ *~~Masonry headers shall not project into the grout space and shall not be permitted to bond wythes of masonry.~~*

2104A.1.3.10.3 TMS 602, Article ~~3.3 B.5~~ 3.3 B.4 Placing ~~masonry~~ mortar and units – Solid units. *Add the following to TMS 602, Article ~~3.3 B.5~~ 3.3 B.4:*

d. Toothing of masonry walls is prohibited. Racking is to be held to a minimum.

2104A.1.3.10.4 TMS 602, Article 3.4 C.2 Wall ties. *Replace TMS 602, Article 3.4 C.2 as follows:*

2. The two wythes shall be bonded together with wall ties. Ties shall not be less than No. 9 (W1.7) wire in the form of rectangles 4 inches (102 mm) wide and 2 inches (50.8 ~~51~~ mm) in length less than the overall wall thickness. Kinks, water drips or deformations shall not be permitted in the ties. One wythe of the wall shall be built up not more than 16 inches (406

mm) ahead of the other wythe. Ties shall be laid not to exceed 24 inches (610 mm) on center horizontally and 16 inches (406 mm) on center vertically for running bond, and not more than 24 inches (610 mm) on center horizontally and 12 inches (305 mm) on center vertically for ~~stack~~ other than running bond.

2104A.1.3.10.5 TMS 602, Article 3.5 B Confinement. *Add the following to TMS 602, Article 3.5 B:*

1. Construct vertical ~~Vertical~~ grout barriers or dams of solid masonry ~~shall be built~~ across the grout space the entire height of the wall to control ~~the flow of the grout horizontally~~ horizontal grout flow. Space grout ~~Grout~~ barriers ~~shall be spaced~~ not more than 30 feet (9.14 m ~~9144~~ mm) apart.

~~***2104A.1.3.10.6 TMS 602, Article 3.5 C Grout pour height.*** *Add the following to TMS 602, Article 3.5 C:~~

~~*4. The minimum clear width of grout space for multi-wythe masonry for pours not exceeding 4 feet (1.2 m) shall be 21/2 inches (64 mm). The clear width of grout space for pours exceeding 4 feet (1.2 m) shall be a minimum of 31/2 inches (89 mm).*~~

2104A.1.3.11 Reinforced hollow-unit masonry.

2104A.1.3.11.1 TMS 602, Article 2.3 A & 2.3 B Masonry unit materials. *Add the following to TMS 602, Articles 2.3 A and 2.3 B:*

1. Provide bond beam units at reinforced hollow unit masonry with a ~~The depth of the~~ bond beam channel ~~below the top of the unit in hollow-unit masonry shall be~~ having a minimum depth of 1 ½ inches (38.1 ~~38~~ mm) ~~minimum~~ and ~~the~~ a minimum width shall be 3 inches (76.2 ~~76~~ mm) ~~minimum~~.

…

SECTION 2105*A* - QUALITY ASSURANCE

2105*A*.1 General. A quality assurance program shall be used to ensure that the constructed *masonry* is in compliance with the *approved construction documents*.

The quality assurance program shall comply with the inspection and testing requirements of Chapter 17A and TMS 602 *and Sections 2105A.2 through 2105A.4.*

2105A.2 Compressive strength, f'$_m$. ~~*The minimum specified compressive strength, f'$_m$, in the design shall be 1,500 psi (10.34 MPa) for all structural masonry construction using materials and details of construction required herein.*~~ *Testing of masonry shall be provided in accordance with TMS 602, Article 1.4 B.*

Exception: *Where values of f'$_m$ greater than 2000 psi (13.79 MPa) are used in the design of reinforced grouted multi-wythe masonry and reinforced hollow-unit masonry, they shall be based on prism test results in accordance with TMS 602, Article 1.4 B.3 submitted by the architect or engineer to the enforcement agency*

which demonstrate the ability of the proposed construction to meet prescribed performance criteria for strength.

The architect or structural engineer shall establish a method of quality control of the masonry construction acceptable to the enforcement agency which shall be described in the contract documents. Verification of compliance with the requirements for the specified strength of masonry during construction shall be provided using prism test method in accordance with TMS 602, Article 1.4 B.3. Verification of compliance with the specified compressive strength prior to the start of construction shall be obtained by using the prism test method in accordance with TMS 602, Article 1.4 B.3.

2105A.3 Mortar and grout tests. TMS 602, Article 1.4 B Compressive Strength Determination. *Modify TMS 602, Article 1.4 B as follows by adding:*

5. Additional testing requirements:

a. At the beginning of all masonry work, at least one test sample of the mortar shall be taken on 3 successive working days and at least at 1-week intervals thereafter. Where mortar is based on a proportion specification, mortar shall be sampled and tested during construction in accordance with ASTM C780, including Annex 4, to verify the proportions specified in ASTM C270, Table 2. Where mortar is based on a property specification, mortar shall be laboratory prepared and tested prior to construction in accordance with ASTM C780 to verify the properties specified in ASTM C270, Table 1 and field sampled and tested during construction in accordance with ASTM C780 to verify the proportions with the laboratory tests. Mortar sampling and testing is not required for preblended mortars in conformance with ASTM C1714 with a material certificate.

b. Samples of grout shall be taken for each mix design, each day grout is placed, and not less than every 5,000 square feet of masonry wall area. They shall meet the minimum strength requirement given in ASTM C476/TMS 602, Section 2.2, or greater as specified.

c. Additional samples shall be taken whenever any change in materials or job conditions occur, as determined by the building official.

d. Test specimens for mortar and grout shall be made as set forth in ASTM C780/C1586 and ASTM C1019. When the prism test method is used in accordance with TMS 602, Article 1.4 B.3 during construction, the tests in this section are not required.

Exception: *For nonbearing non-shear masonry walls not exceeding total wall height of 12 feet above top of foundation, mortar tests shall be permitted to be limited to those at the beginning of masonry work for each mix design.*

…

SECTION 2106*A* - SEISMIC DESIGN

2106*A*.1 Seismic design requirements for masonry. Masonry *structures* and components shall comply with the requirements in Chapter 7 of TMS 402 depending on the *structure's seismic design category*.

2106A.1.1 TMS 402, ~~Sections 5.3.1.4(a)~~ Section 5.4.1.4. ~~and 5.3.1.4(b).~~ *~~Replace~~ Modify TMS 402, ~~Sections 5.3.1.4(a)~~ Section 5.4.1.4 Items #a, b, d & e ~~and 5.3.1.4(b)~~ as follows:*

a. Vertical reinforcement shall be enclosed by lateral ties at least $^3/_8$ (9.5 mm) in diameter. ~~Ties shall be at least 3/8 inch (10 mm) in diameter and shall be embedded in grout. Top tie shall be within 2 inches (51 mm) of the top of the column or of the bottom of the horizontal bar in the supported beam.~~

b. Vertical spacing of lateral ties, over the full height of the column, shall not exceed 8 longitudinal bar diameters, 24 lateral tie bar diameters, 8 inches (203 mm),or one-half the least cross sectional dimension of the member. ~~The spacing of column ties shall be as follows: not greater than 8 bar diameters, 24 tie diameters, or one half the least dimension of the column, or 8 inches (203 mm) for the full column height.~~

d. Lateral ties shall be embedded in grout.

e. Lateral ties shall be located vertically not more than one-half lateral tie spacing above the top of the footing or slab in any story, and shall be spaced not more than one-half a lateral tie spacing nor 2 inches (50.8 mm) below the lowest horizontal reinforcement in beam, girder, slab, or drop panel above. For columns, top tie shall be within 2 inches (51 mm) of the top of the column.

2106A.1.2 TMS 402, Chapter 5. *Add TMS 402, Section ~~5.6~~ 5.7 as follows:*

5.7 ~~5.6~~ – Lateral Support of Members

*5.7.1 ~~5.6.1~~ **–** Lateral support of masonry may be provided by cross walls, columns, pilasters, counterforts or buttresses where spanning horizontally, or by floors, beams, girts or roofs where spanning vertically. Where walls are supported laterally by vertical elements, the stiffness of each vertical element shall exceed that of the tributary area of the wall.*

…

SECTION 2107*A* - ALLOWABLE STRESS DESIGN

2107*A*.1 General. The design of *masonry structures* using *allowable stress design* shall comply with Section 2106*A* and the requirements of Chapters 1 through 8 of TMS 402 except as modified by Sections 2107*A*.2 through *2107A.6*.

…

2107A.5 [OSHPD 1 & 4] Modify TMS402, Section 8.3.4.4 by the following:
All reinforced masonry components that are subjected to in-plane forces shall have a maximum reinforcement ratio, ρ_{max}, not greater than that computed by Equation ~~8-20~~ 8-18.

~~***2107A.6 Masonry Compressive Strength.*** *The specified compressive strength of structural masonry, f'm, shall be equal to or exceed 1,500 psi (10.34 MPa). The value of f'm used to determine nominal strength value in this chapter shall not exceed 3,000 psi (20.7 MPa) for concrete masonry and shall not exceed 4,500 psi (31.03 MPa) for clay masonry.~~

…

SECTION 2108*A* - STRENGTH DESIGN OF MASONRY

2108*A*.1 General. The design of *masonry structures* using strength design shall comply with Section 2106 and the requirements of Chapters 1 through 7 and Chapter 9 of TMS 402, except as modified by Sections 2108*A*.2 through 2108*A*.3.
…

~~***2108A.4 TMS 402, Section 9.1.9.1.1.*** *Modify TMS 402, Section 9.1.9.1.1 as follows:~~

> ~~**9.1.9.1.1 Masonry compressive strength.** The *specified* compressive strength of *structural* masonry, f'_m, shall be equal to or exceed 1,500 psi (10.34 MPa). The value of f'_m used to determine nominal strength values in this chapter shall not exceed *3,000* psi *(20.7 MPa)* for concrete masonry and shall not exceed *4,500* psi (*31.03* MPa) for clay masonry.~~

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 22
STEEL

SECTION 2201 - GENERAL

2201.1 Scope. The provisions of this chapter govern the quality, design, fabrication and erection of steel construction.

2201.1.1 Application. [OSHPD 1R, 2 & 5] *The scope of application of Chapter 22 is as follows:*
1. Structures regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD)~~.~~, which include hospital ~~B~~ buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility buildings and acute psychiatric hospital buildings, as ~~regulated by OSHPD. Applications~~ listed in Sections 1.10.1, 1.10.2 and 1.10.5.

2. Reserved for DSA-SS.

2201.1.2 Amendments in this chapter. [OSHPD 1R, 2 & 5] *OSHPD adopts this chapter ~~and all amendments.~~ as amended.*

~~Exception:~~ *~~Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:~~*

2201.1.3 [OSHPD 1R, 2 & 5] Identification of amendments.

1. ***[OSHPD 1R, 2 & 5]*** *Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD)* ***~~Exception:~~*** *amendments appear in this chapter preceded by the appropriate acronym, as follows:*

[OSHPD 1R] *- For applications listed in Section 1.10.1.*
[OSHPD 2] *- For applications listed in Section 1.10.2.*
[OSHPD 5] *- For applications listed in Section1.10.5.*

2. Reserved for DSA-SS.

~~2201.1.4 Amendments [OSHPD] [OSHPD 1R, 2 & 5]~~ *~~See Section 2213 for additional requirements.~~*

…

2201.4 Connections. The design and installation of steel connections shall be in accordance with the applicable referenced standards within this chapter. For *special inspection* of welding or installation of high-strength bolts, see Section 1705.2.

2201.4.1 ~~2204.1.1~~ Restrained welded connections. [OSHPD 1R, 2 & 5] *Welded structural steel connections having a medium or high level of restraint, as defined by AWS D1.1 Annex H, shall have a minimum pre-heat temperature of not less than 150^0F (66^0C). Welded structural steel connections with welds to*

flange, web, wall, or plate having a high level of restraint shall maintain a post-heat temperature of 300^{0}F (149^{0}C) for a minimum of 1 hour after completion of welding.

2201.5 Anchor rods. Anchor rods shall be set in accordance with the *approved construction documents*. The protrusion of the threaded ends through the connected material shall fully engage the threads of the nuts, but shall not be greater than the length of the threaded portion of the bolts.

2201.5.1 ~~2204.4~~ Column base plate shear lugs [OSHPD 1R, 2 & 5]. *When shear ~~and/or tensile~~ forces are intended to be transferred between column base plates and anchor bolts, provisions shall be made in the design to eliminate the effects of oversized holes permitted in base plates by AISC 360 by use of shear lugs in accordance with ACI 318 Section 17.11, ~~into the reinforced concrete foundation element and/or welded shear transfer plates or other means acceptable to the enforcement agency,~~ when the oversized holes are larger than the anchor bolt by more than 1/8 inch (3.2 mm). When ~~welded shear transfer plates and~~ shear lugs ~~or other means acceptable to the enforcement agency~~ are not used, the anchor bolts shall be checked for the induced bending stresses in combination with the shear stresses.*

SECTION 2202 - STRUCTURAL STEEL AND COMPOSITE STRUCTURAL STEEL AND CONCRETE

2202.1 General. The design, fabrication and erection of *structural steel elements* and composite structural steel and concrete elements in *buildings*, *structures* and portions thereof shall be in accordance with AISC 360.

Exceptions: [OSHPD 1R, 2 & 5]

1. For members designed ~~on the basis of~~ based on tension, the slenderness ratio (L/r) shall not exceed 300, except for design of hangers and bracing in accordance with NFPA 13 and for rod hangers in tension.

2. For members designed ~~on the basis of~~ based on compression, the slenderness ratio (KL/r) shall not exceed 200, except for design of hangers and bracing in accordance with NFPA 13.

…

2202.2.1.2 Seismic Design Category D, E or F. *Structures* assigned to *Seismic Design Category* D, E or F shall be designed and detailed in accordance with AISC 341, except as permitted in ASCE 7, Table 15.4-1. Beam-to-column moment connections in structural steel special moment frames and intermediate moment frames shall be prequalified in accordance with AISC 341, Section K1, qualified by testing in accordance with AISC 341, Section K2, or shall be prequalified in accordance with AISC 358. ***[OSHPD 1R, 2 & 5]*** *All structural steel seismic force-resisting systems in ASCE 7 Table 15.4-1 shall be designed in accordance with AISC 341.*

2202.2.2 Structural steel elements. The design, detailing, fabrication and erection of *structural steel elements* in *seismic force resisting systems* other than those covered in Section 2202.2.1, including struts, *collectors*, chords and foundation elements, shall be in accordance with AISC 341 where either of the following applies:

1. The *structure* is assigned to *Seismic Design Category* D, E or F, except as permitted in ASCE 7, Table 15.4-1.
2. A response modification coefficient, R, greater than 3 in accordance with ASCE 7, Table 12.2-1, is used for the design of the structure assigned to Seismic Design Category B or C.

[OSHPD 1R, 2, 5 & 6] *All structural steel elements shall satisfy the requirements in AISC 341, when applicable.*

~~***2205.3 Modifications to AISC 341. [OSHPD 1R, 2 & 5]***~~
~~***2205.3.1 Section A4.*** *Replace Section A4.1 Item (c) as follows:*~~

~~*(c) Locations and dimensions of protected zones. The fabricator shall permanently mark protected zones of structural elements in the seismic force-resisting system in the building that are designated on the construction documents. If these markings are obscured during construction, such as after the application of fire protection, the owner's designated representative shall re-mark the protected zones as they are designated on the construction documents. Primers or paints used to mark protected zones on steel surfaces, which are to receive sprayed fire resistance material, shall comply with California Building Code Section 704.13.3.2.*~~

~~***2205.3.2 Section I2.*** *Replace Section I2.1 item (d) as follows:*~~

~~*(d) Decking attachments that penetrate the beam flange shall not be placed on beam flanges within the protected zone, except power-actuated fasteners up to 0.18 in. diameter are permitted, provided that the penetration is less than 85% of beam flange thickness.*~~

2202.3 ~~***2205.4***~~ ***Modifications to AISC 358. [OSHPD 1R, 2 & 5]***

~~***2205.4.1 Design Requirements, 2.1 Special and Intermediate Moment Frame Connection Types, Table 2-1 Prequalified Moment Connections modifications.***~~
~~*The prequalified bolted moment connections are not permitted in buildings.*~~

~~***Exceptions:***~~

~~*1. Erection bolts are permitted.*~~
~~*2. The approved bolted moment connection in accordance with AISC 358 Chapter 10 as permitted by the exception to Section 2206.2 and AISC 358-16 Supplement No. 1, Chapter 11.*~~
~~*3. Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light steel-frame construction.*~~

2202.3.1 Modifications to AISC 358 Chapter 10. *[Relocated from exception to existing Section 2206.2.1] Steel and concrete ConXtech ConXL composite special moment frame ~~with the approved moment~~ connections ~~in accordance with AISC 358 Chapter 10~~ shall be permitted, provided:*

1. Beams are provided with reduced beam sections (RBS);
2. Web extension to beam web two-sided fillet weld welds are sized to develop expected strength of the beam web and shall not be less than a 1/4 inch fillet weld; and
3. The built-up box column wall thickness shall not be less than 1.25 inches and the HSS column wall thickness shall not be less than 1/2 inch.

2202.3.2 ~~2205.4.2~~ Modifications to AISC 358 Chapter 11 Welded Moment Connection~~ - Chapter 11~~. *The welded sideplate steel moment connection shall be permitted provided:*

1. The beams shall consist of either rolled or built-up wide flange sections.
2. The biaxial dual-strong axis and column minor axis configurations of the moment connection shall be considered as an alternative system.
3. For SMF and IMF systems, U-shaped cover plates shall be used and the hinge-to-hinge span to beam depth, L_h/d, shall be greater than or equal to 5.
4. The width-to-thickness ratios for beam flanges shall not be less than 3.
5. The spacing for lateral bracing of wide flange beams, L_b, shall include the length of the side plate at beam ends.
6. The extension of the side plates beyond the face of the column shall be within the range of 0.77d to 1.0d.
7. The gap-to-side plate thickness ratio shall range from 2.1 to 2.3.
8. Demand critical fillet welds {2}, {5}, {5a} and {7} shall have Magnetic Particle Testing (MT) in accordance with AWS D1.1 for procedure, technique, and acceptance. Inspect the beginning and end of these welds for a 6-inch length, plus any location along the length of the weld where a start and restart is visually noted for a distance of 6 inches on either side of the start/stop location.

2202.3.3 ~~2205.4.3~~ Modifications to AISC 358 Chapter 11 Bolted Moment Connection. ~~- Chapter 11.,Supplement No. 1.~~ *The bolted sideplate steel moment connection ~~in accordance with AISC 358-16 Supplement No. 1~~ shall be permitted provided:*

1. A linear analysis procedure shall be used for design of the SMF and IMF systems using the bolted sideplate connection when permitted ~~in accordance with~~ by ASCE 7. ~~Nonlinear procedures will be considered as an alternative system.~~
2. The beams shall consist of either rolled or built-up wide flange sections. Columns shall consist of rolled or built-up wide flange sections or noncomposite built-up box or HSS with a minimum wall thickness of 3/4 inch (19 mm), or satisfy the requirements of
width-to-thickness ratios of highly ductile members in AISC 341-16.

3. The biaxial dual-strong axis and column minor axis configurations of the moment connection shall be considered as an alternative system.
4. For SMF and IMF systems, on the sideplate standard or configuration A the U-shaped cover plates shall be used with the k dimension extension. The k dimension extension length is defined as beam depth d_b/6, rounded to the nearest 1/2 inch (12.7 mm).
5. The hinge-to-hinge span to beam depth, L_h/d, shall be greater than or equal to 4.5.
6. The width-to-thickness ratios for beam flanges shall not be less than 3.5.

> ***Exception:*** *For width-to-thickness ratios less than 3.5 the C_{pr} shall be calculated in accordance with that for welded sideplate connections but in no case shall the width-to-thickness ratio be less than 3.0.*

7. The minimum bolt-to-bolt spacing shall not be less than 3 bolt diameters.
8. The extension of the side plates beyond the face of the column shall be within the range of 0.65d to 1.5d.
9. The gap-to-side plate thickness ratio shall range from 2.1 to 2.3.
10. Demand Critical fillet welds {2}, {5}, {5a} and {8} shall have Magnetic Particle Testing (MT) in accordance with AWS D1.1 for procedure, technique and acceptance. Inspect the beginning and end of these welds for a 6-inch (152 mm) length, plus any location along the length of the weld where a start and restart is visually noted for a distance of 6 inches (152 mm) on either side of the start/stop location.
11. The connection specific factor to account for peak connection strength, C_{pr}, shall be between 1.15 and
1.35. Calculations shall be submitted to OSHPD for review and approval.
12. For in-plane collectors transferring axial loads into the sideplate connection, coordination between sideplate and the registered design professional in responsible charge will be required to confirm the collector connection is sufficient to transfer the load into the moment frame system. This requirement shall be satisfied by designing the sideplate connections in the first bay of a multi-bay sideplate moment frame or an end bay to have a minimum connection capacity, including combined shear (V_u + V_g) and moment (M_{pr}) demands, of at least 1.2 times the M_{pr} at the plastic hinge location when the axial load, as determined by ASCE 7, Section 12.10.2.1 without
Ω_o, exceeds 0.1 F_yA_g of the sideplate beam.
13. A complete frame analysis for gravity and design wind loading using LRFD load combinations in Section 1605.1 shall be performed including Demand/Capacity Ratios. Frame beam member nominal moment strengths (Mn) used for gravity and design wind loading for the bolted sideplate connection using Class A or Class B faying surfaces shall be taken as $0.80F_yZ$ for frame beams up to 300 plf and $0.60F_yZ$ for frame beams greater than 300 plf.
14. For moment frame beams with maximum beam shear greater than 90 percent of the vertical bolt shear capacity, a secondary check is to be provided to confirm the vertical bolt shear capacities are sufficient.
15. Bolted sideplate connections used on heavy-shallow frame beams for beams greater than 200 plf and shallower than 24 inches (610 mm) in depth shall be

considered as an alternative system.
16. Skewed beams shall utilize the link-beam fabrication method with CJP welded splices for skew angles. The skew angle shall be less than 15 degrees.
17. For two-sided bolted sideplate connections sharing the same side plates at the same height and depth across the column, the vertical offset in the beams shall not exceed 10 inches (254 mm).

2202.3.4 Modifications to AISC 358 Chapter 12. *The Simpson Strong-Tie (SST) Strong Frame bolted moment connection shall be permitted, provided:*

1. *A linear analysis procedure shall be used for design of the SMF and IMF systems using the SST yield link when permitted by ASCE 7.*
2. *Only T-stub yield links are permitted. End plate yield links are not permitted.*
3. *The biaxial dual-strong axis and column minor axis configurations of the moment connection shall be considered as an alternative system.*
4. *Beam flange width-to-thickness ratio shall satisfy AISC 341 Table D1.1b.*
5. *Yield Link stem-to-beam flange connection bolts shall not slip under wind design demand loads. Yield-Link stem to beam flange connection shall be designed to prevent slip using AISC 360 Equation (J3-4), where the slip resistance μ is taken to be 0.3.*
6. *Double shear plate connection is permitted to increase connection axial capacity for collector loads. A PJP groove weld for second shear plate is permissible due to space restrictions.*

2202.3.5 Modifications to AISC 358 Chapter 15. *The DuraFuse Frames (DFF) bolted moment connection shall be permitted, provided:*

1. *A linear analysis procedure shall be used for design of the SMF systems using the DFF when permitted by ASCE 7.*
2. *The biaxial dual-strong axis and column minor axis configurations of the moment connection shall be considered as an alternative system.*
3. *DFF connection bolts shall not slip under wind design demand loads. The connection shall be designed to prevent slip using AISC 360 Equation J3-4, where the slip resistance is taken to be 0.3.*
4. *Beam flange width-to-thickness ratio shall satisfy AISC 341 Table D1.1b.*
5. *The beam weight shall be limited to a maximum of 232 lbs/ft.*

…

SECTION 2204—COLD-FORMED STEEL

2204.1 General. The design of cold-formed carbon and low-alloy steel structural members not covered in Sections 2206 through 2209 shall be in accordance with AISI S100. The design of cold-formed steel diaphragms shall be in accordance with additional provisions of AISI S310 as applicable. Where required, the seismic design of cold-formed steel *structures* shall be in accordance with the additional provisions of Section 2204.2.

[Relocated from existing Section 2210.1] ~~***[OSHPD 1R, 2 & 5]*** *Modify AISI S100 Chapter J (Connections and Joints, Section J7.2) by the following: Power-actuated fastener allowable design strength shall not exceed that permitted in the evaluation report qualified by ICC AC 70 or ASCE 7, Section 13.4.5.*~~

2204.2 Seismic design. The design and detailing of cold-formed steel seismic force-resisting systems shall be in accordance with Sections 2204.2.1 and 2204.2.2, as applicable.

[Relocated from existing Section 2210.1] ***[OSHPD 1R, 2 & 5]*** *Cold-formed steel structures shall be designed and detailed in accordance with the requirements of AISI S100 and AISI S400. Cold-formed steel special bolted moment frames are not permitted by OSHPD.*

…

SECTION 2206—COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION

2206.1 Structural framing. For cold-formed steel *light-frame construction*, the design and installation of the following structural framing systems, including their members and connections, shall be in accordance with AISI S240, and Sections 2206.1.1 through 2206.1.3, as applicable:

1. Floor and roof systems.
2. Structural walls.
3. Shear walls, strap-braced walls and diaphragms that resist in-plane lateral loads.
4. Trusses.

2206.1.1 Seismic requirements for cold-formed steel structural systems. The design of cold-formed steel *light-frame construction* to resist seismic forces shall be in accordance with the provisions of Section 2206.1.1.1 or 2206.1.1.2, as applicable.

…

2206.1.1.2 Seismic Design Categories D through F. In cold-formed steel *light-frame construction* assigned to *Seismic Design Category* D, E or F, the *seismic force-resisting system* shall be designed and detailed in accordance with AISI S400.

[Relocated from existing Section 2211.1.2] ***[OSHPD 1R, 2 & 5]:***

1. Cold-formed steel stud foundation plates or sills shall be bolted or fastened to the foundation or foundation wall in accordance with Section 2304.3.4, Item 2.
2. Shear wall assemblies in accordance with Sections E5, E6 and E7 of AISI S400 are not permitted within the seismic force-resisting system of buildings.

…

2206.1.3 Truss design. Cold-formed steel trusses shall comply with the additional provisions of Sections 2206.1.3.1. through 2206.1.3.3.

[Relocated from existing Section 2211.1.3] ***[OSHPD 1R, 2 & 5]*** *Complete engineering analysis and truss design drawings shall accompany the construction documents submitted to the enforcement agency for approval. When load testing is required, the test report shall be submitted with the truss design drawings and engineering analysis to the enforcement agency.*

…

2206.2 Nonstructural members. For cold-formed steel *light-frame construction*, the design and installation of nonstructural members and connections shall be in accordance with AISI S220. *[Relocated from existing Section 2211.2]* ***[OSHPD 1R, 2 & 5]*** *for noncomposite assembly design. Where nonstructural members do not qualify for design under AISI S220, the design and installation of nonstructural members and connections shall be in accordance with AISI S240 or S100.*

…

SECTION 2207—STEEL JOISTS

2207.1 General. The design, manufacture and use of open-web *steel joists* and joist girders shall be in accordance with either SJI 100 or SJI 200, as applicable.

2207.1.1 Seismic design. Where required, the seismic design of *buildings* shall be in accordance with the additional provisions of Section 2202.2 or 2206.1.1.
…

2207.4 Steel joist drawings. *Steel joist* placement plans shall be provided to show the *steel joist* products as specified on the *approved construction documents* and are to be utilized for field installation in accordance with specific project requirements as stated in Section 2207.2. *Steel joist* placement plans shall include, at a minimum, the following:

1. Listing of applicable *loads* as stated in Section 2207.2 and used in the design of the *steel joists* and joist girders as specified in the *approved construction documents*.
2. Profiles for joist and joist girder configurations that differ from those defined by SJI 100 or SJI 200.
3. Connection requirements for:
    - 3.1. Joist supports.
    - 3.2. Joist girder supports.
    - 3.3. Field splices.
    - 3.4. Bridging attachments.
4. Deflection criteria for joists and joist girder configurations that differ from those defined by SJI 100 or SJI 200.

5. Size, location and connections for bridging.
6. Joist headers.

Steel joist placement plans do not require the seal and signature of the joist manufacturer's *registered design professional*. *[Relocated from existing Section 2207.4]* ***[OSHPD 1R, 2 & 5]*** *Not permitted by OSHPD.*

…

2207.6 Joist chord bracing. [OSHPD 1R, 2 & 5] *The chords of all joists shall be laterally supported at all points where the chords change direction.*

…

SECTION 2208—STEEL DECK

2208.1 Steel decks. The design and construction of cold-formed steel floor and roof decks and composite slabs of concrete and steel deck shall be in accordance with SDI SD. The design of cold-formed steel diaphragms shall be in accordance with additional provisions of AISI S310, as applicable.

[Relocated from existing Section 2210.2] ***[OSHPD 1R, 2 & 5]*** *The base material thickness of the steel deck shall not be less than 0.0359 inch (0.9 mm) (20 gage).*

Exception: *For single-story, nonbuilding structures similar to buildings, the minimum deck thickness need not apply if the steel roof deck is not being used as the diaphragm and there are no suspended hangers or bracing for nonstructural components attached to the deck.*

…

SECTION 2214—STEEL CABLE STRUCTURES

2214.1 General. The design, fabrication and erection including related connections, and protective coatings of steel cables for *buildings* shall be in accordance with ASCE 19. *[Relocated from existing Section 2208.1]* ***[OSHPD 1R, 2 & 5]*** *Steel cables with glass or polymer fabric material acting as a tensile membrane structure is an alternative system.*

…

SECTION ~~2213~~ 2215 - TESTING AND FIELD VERIFICATION [OSHPD 1R, 2 & 5]

2215.1 ~~***2213.1***~~ ***Tests of high-strength bolts, nuts and washers****. High-strength bolts, nuts, and washers shall be sampled and tested by an approved agency for conformance with the requirements of applicable ASTM standards.*

A minimum of nine samples per lot, as defined in the ASTM standards for bolts [not nuts and washers], shall be tested for tensile properties in accordance with ASTM F606, but need not exceed three samples per 400 bolts.

2215.2 ~~***2213.2***~~ ***Tests of end-welded studs.*** *End-welded studs shall be tested in accordance with the requirements of the AWS D1.1, Sections 7.7 and 7.8.*

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 22A
STEEL

SECTION 2201*A* – GENERAL

2201*A*.1 Scope. The provisions of this chapter govern the quality, design, fabrication and erection of steel construction.

2201A.1.1 Application. *The scope of application of Chapter 22A is as follows:*

1. Reserved for DSA-SS.

2. Structures regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD), which include those applications listed in Sections 1.10.1 and 1.10.4. These applications include hospitals and correctional treatment centers.

2201A.1.2 Amendments in this chapter. *OSHPD adopt this chapter and all amendments.*

Exception: *Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:*

1. Reserved for DSA-SS.

2. Office of Statewide ~~Health~~ Hospital Planning and Development:

[OSHPD 1] - *For applications listed in Section 1.10.1.*

[OSHPD 4] - *For applications listed in Section 1.10.4.*

2201*A*.2 Identification. Identification of steel members shall be in accordance with the applicable referenced standards within this chapter. Other steel furnished for structural load-carrying purposes shall be identified for conformity to the ordered grade in accordance with the specified ASTM standard or other specification and the provisions of this chapter. Where the steel grade is not readily identifiable from marking and test records, the steel shall be tested to verify conformity to such standards.

2201*A*.3 Protection. The protection of steel members shall be in accordance with the applicable referenced standards within this chapter.

2201A.4 Connections. The design and installation of steel connections shall be in accordance with the applicable referenced standards within this chapter. For *special inspection* of welding or installation of high-strength bolts, see Section 1705*A*.2.

2201A.4.1 ~~2204A.1.1~~ Restrained welded connections. [OSHPD 1 & 4] *Welded structural steel connections having a medium or high level of restraint, as defined by AWS D1.1 Annex H, shall have a minimum pre-heat temperature of not less than 150^0F (66^0C). Welded structural steel connections with welds to flange, web, wall, or plate having a high level of restraint shall maintain a post-heat*

temperature of 300^{0}F (149^{0}C) for a minimum of 1 hour after completion of welding.

2201*A*.5 Anchor rods. Anchor rods shall be set in accordance with the *approved construction documents*. The protrusion of the threaded ends through the connected material shall fully engage the threads of the nuts, but shall not be greater than the length of the threaded portion of the bolts.

2201A.5.1 ~~***2204A.4***~~ ***Column base plate shear lugs.*** *When shear ~~and/or tensile~~ forces are intended to be transferred between column base plates and anchor bolts, provisions shall be made in the design to eliminate the effects of oversized holes permitted in base plates by AISC 360 by use of shear lugs in accordance with ACI 318 Section 17.11, ~~into the reinforced concrete foundation element and/or welded shear transfer plates or other means acceptable to the enforcement agency,~~ when the oversized holes are larger than the anchor bolt by more than 1/8 inch (3.2 mm). When ~~welded shear transfer plates and~~ shear lugs ~~or other means acceptable to the enforcement agency~~ are not used, the anchor bolts shall be checked for the induced bending stresses in combination with the shear stresses.*

SECTION 2202*A* - STRUCTURAL STEEL AND COMPOSITE STRUCTURAL STEEL AND CONCRETE

2202*A*.1 General. The design, fabrication and erection of *structural steel elements* and composite structural steel and concrete elements in *buildings*, *structures* and portions thereof shall be in accordance with AISC 360.

Exceptions: [OSHPD 1 & 4]

1. For members designed ~~on the basis of~~ based on tension, the slenderness ratio (L/r) shall not exceed 300, except for design of hangers and bracing in accordance with NFPA 13 and for rod hangers in tension.

2. For members designed ~~on the basis of~~ based on compression, the slenderness ratio (KL/r) shall not exceed 200, except for design of hangers and bracing in accordance with NFPA 13.

2202*A*.2 Seismic design. Where required, the seismic design, fabrication and erection of *buildings*, *structures* and portions thereof shall be in accordance with Section 2202A.2.1 or 2202A.2.2, as applicable.

2202*A*.2.1 Structural steel seismic force-resisting systems and composite structural steel and concrete seismic force-resisting systems. The design, detailing, fabrication and erection of structural steel *seismic force-resisting systems* and composite structural steel and concrete seismic force-resisting systems shall be in accordance with the provisions of Section 2202*A*.2.1.1 or 2202*A*.2.1.2, as applicable. *[Relocated from existing Section 2206A.2.1] Seismic requirements for composite structural steel and concrete construction shall be considered as an alternative system, except as permitted by Section 2202A.3.1.*

2202A.2.1.1 Seismic Design Category B or C. *[Relocated from existing Section 2205A.2.1.1] Not permitted by OSHPD. ~~Structures assigned to~~*

~~*Seismic Design Category* B or C shall be of any construction permitted in Section 2202. Where a response modification coefficient, *R*, in accordance with ASCE 7, Table12.2-1, is used for the design of *structures* assigned to *Seismic Design Category* B or C, the *structures* shall be designed and detailed in accordance with the requirements of AISC 341. Beam-to-column moment connections in structural steel special moment frames and intermediate moment frames shall be prequalified in accordance with AISC 341, Section K1, qualified by testing in accordance with AISC 341, Section K2, or shall be prequalified in accordance with AISC 358.~~

~~**Exception:** The response modification coefficient, *R*, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1, shall be permitted for structural steel systems designed and detailed in accordance with AISC 360, and need not be designed and detailed in accordance with AISC 341.~~

2202*A*.2.1.2 Seismic Design Category D, E or F. *Structures* assigned to *Seismic Design Category* D, E or F shall be designed and detailed in accordance with AISC 341~~, except as permitted in ASCE 7, Table 15.4-1~~. Beam-to-column moment connections in structural steel special moment frames and intermediate moment frames shall be prequalified in accordance with AISC 341, Section K1, qualified by testing in accordance with AISC 341, Section K2, or shall be prequalified in accordance with AISC 358.

2202*A*.2.2 Structural steel elements. The design, detailing, fabrication and erection of *structural steel elements* in *seismic force resisting systems* ~~other than those covered in Section 2202.2.1~~, including struts, *collectors*, chords and foundation elements, shall be in accordance with AISC 341.~~ where either of the following applies:~~

~~1. The *the structure* is assigned to *Seismic Design Category* D, E or F, except as permitted in ASCE 7, Table 15.4-1.~~

~~2. A response modification coefficient, R, greater than 3 in accordance with ASCE 7, Table 12.2-1, is used for the design of the *structure* assigned to *Seismic Design Category* B or C.~~

~~***2205A.4 Modifications to AISC 341. [OSHPD 1 and 4]***~~

~~***2205A.4.1 Glossary.*** *Modify glossary by adding the following:*~~

~~***Inelastic Rotation:*** *The permanent or plastic portion of the rotation angle between a beam and the column, or between a link and the column of the test specimen, measured in radians. The inelastic rotation shall be computed based upon an analysis of the test specimen deformations. Sources of inelastic rotation include yielding of members and connectors, yielding of connection elements and slip between members and connection elements. For beam-to-column moment connections in special moment frames, the inelastic rotation is represented by the plastic chord rotation angle calculated as the plastic deflection of the beam or girder, at the center of its span divided by the distance between the center of the~~

~~*beam span and the centerline of the panel zone of the beam-column connection. For link-to-column connections in eccentrically braced frames, inelastic rotation shall be computed based upon the assumption that inelastic action is concentrated at a single point located at the intersection of the centerline of the link with the face of the column.*~~

~~***2205A.4.2 Section A4.*** *Replace Section A4.1 Item (c) as follows:*~~
~~*(c) Locations and dimensions of protected zones. The fabricator shall permanently mark protected zones of structural elements in the seismic force-resisting system in the building that are designated on the construction documents. If these markings are obscured during construction, such as after the application of fire protection, the owner's designated representative shall re-mark the protected zones as they are designated on the construction documents. [OSHPD 1 & 4] Primers or paints used to mark protected zones on steel surfaces, which are to receive sprayed fire-resistance material, shall comply with California Building Code Section 704.13.3.2.*~~

~~***2205A.4.3 Section I2. [OSHPD 1 & 4]*** *Replace Section I2.1 Item (d) as follows:*~~
~~*(d) Decking attachments that penetrate the beam flange shall not be placed on beam flanges within the protected zone, except power-actuated fasteners up to 0.18 inch in diameter are permitted, provided that the penetration is less than 85 percent of beam flange thickness.*~~

~~***2205A.4.4 Section E2.*** *Replace Section E2.6c Item (a) by the following:*~~
~~*(a) Use of IMF connections designed in accordance with ANSI/AISC 358 shall be as modified in Section 2205A.5.2.*~~

~~***2205A.4.5 Section E3.*** *Replace Section E3.6b Item (a) by the following:*~~
~~*(a) The connection shall be capable of sustaining an interstory drift angle of at least 0.04 radians and an inelastic rotation of 0.03 radians.*~~

~~***2205A.4.6 Section E3.*** *Replace Section E3.6c Item (a) by the following:*~~
~~*(a) Use of SMF connections designed in accordance with ANSI /AISC 358 shall be as modified in Section 2205A.5.*~~

~~***2205A.4.7 Section F2.*** *Special concentrically braced frames (SCBF) modifications*~~

~~*5b. Diagonal braces, Add a new section as follows.*~~
~~*(d) The use of rectangular or square HSS are not permitted for bracing members, unless filled solid with cement grout having a minimum compressive strength of 3000 psi at 28 days. The effects of composite action in the filled composite brace shall be considered in the sectional properties of the system where it results in the more severe loading condition or detailing.*~~

~~***2205A.4.8 Section F3.*** *Modify Section F3.6e Item 2 as follows:*~~
~~*Exception is not permitted.*~~

~~***2205A.4.9 Section K2.*** *Replace Section K2.3b as follows:*~~
~~*The size of the beam or link used in the test specimen shall be within the following limits:*~~

~~*1. The test beams or links shall be no less than 100 percent of the depth of the prototype beam or link.*~~
~~*2. The test beams or links shall be no less than 100 percent of the weight per foot of the prototype beam or link.*~~

~~*The size of the column used in the test specimen shall properly represent the inelastic action in the column, as per the requirements in Section K2.3a. In addition, the depth of the test column shall be no less than 90 percent of the depth of the prototype column.*~~

~~*Extrapolation beyond the limitations stated in this section shall be permitted subject to peer review and approval by the enforcement agency.*~~

~~***2205A.4.10 Section K2.*** *Modify Section K2.8 by the following:*~~
~~*The test specimen must sustain the required interstory drift angle, or link rotation angle, and inelastic rotation for at least two complete loading cycles.*~~

2202A.3 ~~***2205A.5***~~ ***Modifications to AISC 358. [OSHPD 1 and 4]***

~~***2205A.5.1.*** *Design Requirements, 2.1 Special and Intermediate Moment Frame Connection Types, Table 2-1 Prequalified Moment Connections modifications.*~~

~~*The prequalified bolted moment connections are not permitted in buildings.*~~

~~***Exceptions:***~~

~~*1. Erection bolts are permitted.*~~
~~*2. The approved bolted moment connection in accordance with AISC 358 Chapter 10 as permitted by the exception to Section 2206A.2 and AISC 358-16 Supplement No. 1, Chapter 11.*~~

2202A.3.1 Modifications to AISC 358 Chapter 10. *[Relocated from exception to existing Section 2206A.2.1] Steel and concrete ConXtech ConXL composite special moment frame* ~~*with the approved moment*~~ *connections* ~~*in accordance with AISC 358 Chapter 10*~~ *shall be permitted, provided:*

1. Beams are provided with reduced beam sections (RBS);
2. Web extension to beam web two-sided fillet weld welds are sized to develop expected strength of the beam web and shall not be less than a 1/4 inch fillet weld; and
3. The built-up box column wall thickness shall not be less than 1.25 inches and the HSS column wall thickness shall not be less than 1/2 inch.

2202A.3.2 ~~2205A.5.2~~ Modifications to AISC 358 Chapter 11 Welded Moment Connection~~ - Chapter 11~~. *The welded side plate steel moment connection shall be permitted provided:*

1. The beams shall consist of either rolled or built-up wide flange sections.
2. The biaxial dual-strong axis and column minor axis configurations of the moment connection shall be considered as an alternative system.
3. For SMF and IMF systems, U-shaped cover plates shall be used and the hinge-to-hinge span to beam depth, L_h/d, shall be greater than or equal to 5.
4. The width-to-thickness ratios for beam flanges shall not be less than 3.
5. The spacing for lateral bracing of wide flange beams, L_b, shall include the length of the side plate at beam ends.
6. The extension of the side plates beyond the face of the column shall be within the range of 0.77d to 1.0d.
7. The gap-to-side plate thickness ratio shall range from 2.1 to 2.3.
8. Demand critical fillet welds {2}, {5}, {5a} and {7} shall have Magnetic Particle Testing (MT) in accordance with AWS D1.1 for procedure, technique and acceptance. Inspect the beginning and end of these welds for a 6-inch length, plus any location along the length of the weld where a start and restart is visually noted for a distance of 6 inches on either side of the start/stop location.

2202A.3.3 ~~2205A.5.3~~ Modifications to AISC 358 Chapter 11 Bolted Moment Connection. ~~- Chapter 11.,Supplement No. 1.~~ *The bolted sideplate steel moment connection ~~in accordance with AISC 358-16 Supplement No.1~~ shall be permitted provided:*

1. A linear analysis procedure shall be used for design of the SMF and IMF systems using the bolted sideplate connection when permitted in accordance with ASCE 7. ~~Nonlinear procedures will be considered as an alternative system.~~
2. The beams shall consist of either rolled or built-up wide flange sections. Columns shall consist of rolled or built-up wide flange sections or noncomposite built-up box or HSS with a minimum wall thickness of 3/4 inch (19 mm), or satisfy the requirements of width-to-thickness ratios of highly ductile members in AISC 341~~-16~~.
3. The biaxial dual-strong axis and column minor axis configurations of the moment connection shall be considered as an alternative system.
4. For SMF and IMF systems, on the sideplate standard or configuration A the U-shaped cover plates shall be used with the k dimension extension. The k dimension extension length is defined as beam depth $d_b/6$, rounded to the nearest 1/2 inch (12.7 mm).
5. The hinge-to-hinge span to beam depth, L_h/d, shall be greater than or equal to 4.5.
6. The width-to-thickness ratios for beam flanges shall not be less than 3.5.
***Exception:** For width-to-thickness ratios less than 3.5 the C_{pr} shall be calculated in accordance with that for welded sideplate connections but in no case shall the width-to-thickness ratio be less than 3.0.*
7. The minimum bolt-to-bolt spacing shall not be less than 3 bolt diameters.

8. The extension of the side plates beyond the face of the column shall be within the range of 0.65d to 1.5d.
9. The gap-to-side plate thickness ratio shall range from 2.1 to 2.3.
10. Demand Critical fillet welds {2}, {5}, {5a} and {8} shall have Magnetic Particle Testing (MT) in accordance with AWS D1.1 for procedure, technique and acceptance. Inspect the beginning and end of these welds for a 6-inch (152 mm) length, plus any location along the length of the weld where a start and restart is visually noted for a distance of 6 inches (152 mm) on either side of the start/stop location.
11. The connection specific factor to account for peak connection strength, C_{pr}, shall be between 1.15 and 1.35. Calculations shall be submitted to OSHPD for review and approval.
12. For in-plane collectors transferring axial loads into the sideplate connection, coordination between sideplate and the registered design professional in responsible charge will be required to confirm the collector connection is sufficient to transfer the load into the moment frame system. This requirement shall be satisfied by designing the sideplate connections in the first bay of a multi-bay sideplate moment frame or an end bay to have a minimum connection capacity, including combined shear ($V_u + V_g$) and moment (M_{pr}) demands, of at least 1.2 times the M_{pr} at the plastic hinge location when the axial load, as determined by ASCE 7, Section 12.10.2.1 without Ω_o, exceeds 0.1 F_yA_g of the sideplate beam.
13. A complete frame analysis for gravity and design wind loading using LRFD load combinations in Section 1605A.1 shall be performed including Demand/Capacity Ratios. Frame beam member nominal moment strengths (Mn) used for gravity and design wind loading for the bolted sideplate connection using Class A or Class B faying surfaces shall be taken as 0.80 F_yZ for frame beams up to 300 plf and 0.60 F_yZ for frame beams greater than 300 plf.
14. For moment frame beams with maximum beam shear greater than 90 percent of the vertical bolt shear capacity, a secondary check is to be provided to confirm the vertical bolt shear capacities are sufficient.
15. Bolted sideplate connections used on heavy-shallow frame beams for beams greater than 200 plf and shallower than 24 inches (610 mm) in depth shall be considered as an alternative system.
16. Skewed beams shall utilize the link-beam fabrication method with CJP welded splices for skew angles. The skew angle shall be less than 15 degrees.
17. For two-sided bolted sideplate connections sharing the same side plates at the same height and depth across the column, the vertical offset in the beams shall not exceed 10 inches (254 mm).

2202A.3.4 Modifications to AISC 358 Chapter 12. *The Simpson Strong-Tie (SST) Strong Frame bolted moment connection shall be permitted, provided:*

7. *A linear analysis procedure shall be used for design of the SMF and IMF systems using the SST yield link when permitted by ASCE 7.*
8. *Only T-stub yield links are permitted. End plate yield links are not permitted.*

9. *The biaxial dual-strong axis and column minor axis configurations of the moment connection shall be considered as an alternative system.*
10. *Beam flange width-to-thickness ratio shall satisfy AISC 341 Table D1.1b.*
11. *Yield Link stem-to-beam flange connection bolts shall not slip under wind design demand loads. Yield-Link stem to beam flange connection shall be designed to prevent slip using AISC 360 Equation (J3-4), where the slip resistance μ is taken to be 0.3.*
12. *Double shear plate connection is permitted to increase connection axial capacity for collector loads. A PJP groove weld for second shear plate is permissible due to space restrictions.*

2202A.3.5 Modifications to AISC 358 Chapter 15. *The DuraFuse Frames (DFF) bolted moment connection shall be permitted, provided:*

6. *A linear analysis procedure shall be used for design of the SMF systems using the DFF when permitted by ASCE 7.*
7. *The biaxial dual-strong axis and column minor axis configurations of the moment connection shall be considered as an alternative system.*
8. *DFF connection bolts shall not slip under wind design demand loads. The connection shall be designed to prevent slip using AISC 360 Equation J3-4, where the slip resistance is taken to be 0.3.*
9. *Beam flange width-to-thickness ratio shall satisfy AISC 341 Table D1.1b.*
10. *The beam weight shall be limited to a maximum of 232 lbs/ft.*

SECTION 2203*A* - STRUCTURAL STAINLESS STEEL

2203*A*.1 General. The design, manufacture and erection of austenitic and duplex structural stainless steel shall be in accordance with AISC 370.

SECTION 2204*A* - COLD-FORMED STEEL

2204*A*.1 General. The design of cold-formed carbon and low-alloy steel structural members not covered in Sections 2206A through 2209*A* shall be in accordance with AISI S100. The design of cold-formed steel diaphragms shall be in accordance with additional provisions of AISI S310 as applicable. ~~Where required, the seismic design of cold-formed steel *structures* shall be in accordance with the additional provisions of Section 2204.2.~~

[Relocated from existing Section 2210A.1] ~~*Modify AISI S100 Chapter J (Connections and Joints, Section J7.2) by the following: Power-actuated fastener available strength shall not exceed those strengths determined in accordance with Section 1617A.1.20 of this code.*~~

~~**2204.2 Seismic design.** The design and detailing of cold-formed steel seismic force-resisting systems shall be in accordance with Sections 2204.2.1 and 2204.2.2, as applicable.~~

~~**2204.2.1 CFS special bolted moment frames.** Where a response modification coefficient, *R*, in accordance with ASCE 7, Table 12.2-1, is used for the design of cold-formed steel special bolted moment frames, the *structures* shall be designed and detailed in accordance with the requirements of AISI S400.~~

~~**2204.2.2 Cold-formed steel seismic force-resisting systems.** The response modification coefficient, *R*, designated in ASCE 7 Table 12.2-1 for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" shall be permitted for systems designed and detailed in accordance with AISI S100. Such systems need not be designed and detailed in accordance with AISI S400.~~

SECTION 2205*A* - COLD-FORMED STAINLESS STEEL

2205*A*.1 General. The design of cold-formed stainless steel structural members shall be in accordance with ASCE 8.

SECTION 2206*A* - COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION

2206*A*.1 Structural framing. For cold-formed steel *light-frame construction*, the design and installation of the following structural framing systems, including their members and connections, shall be in accordance with AISI S240, and Sections 2206*A*.1.1 through 2206.1.3, as applicable:

1. Floor and roof systems.
2. Structural walls.
3. Shear walls, strap-braced walls and diaphragms that resist in-plane lateral loads.
4. Trusses.

2206*A*.1.1 Seismic requirements for cold-formed steel structural systems. The design of cold-formed steel *light-frame construction* to resist seismic forces shall be in accordance with the provisions of Section 2206*A*.1.1.1 or 2206*A*.1.1.2, as applicable.

2206*A*.1.1.1 Seismic Design Categories B and C. *[Relocated from existing Section 2211A.1.1.1] Not permitted by OSHPD.* ~~Where a response modification coefficient, *R*, in accordance with ASCE 7, Table 12.2-1 is used for the design of cold-formed steel *light-frame construction* assigned to *Seismic Design Category* B or C, the *seismic force-resisting system* shall be designed and detailed in accordance with the requirements of AISI S400.~~

> ~~**Exception:** The response modification coefficient, *R*, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1, shall be permitted for systems designed and detailed in accordance with AISI S240 and need not be designed and detailed in accordance with AISI S400.~~

2206A.1.1.2 Seismic Design Categories D through F. In cold-formed steel *light-frame construction* assigned to *Seismic Design Category* D, E or F, the *seismic force-resisting system* shall be designed and detailed in accordance with AISI S400. *[Relocated from existing Section 2211A.1.1.1] The following additional requirements apply:*

1. Cold-formed steel stud foundation plates or sills shall be bolted or fastened to the foundation or foundation wall in accordance with Section 2304.3.4, Item 2.

2. Shear wall assemblies in accordance with Sections E5, E6 and E7 of AISI 400 are not permitted within the seismic force-resisting system of buildings.

2206A.1.2 Prescriptive framing. *[Relocated from existing Section 2211A.1.2] Not permitted by OSHPD.* ~~Detached one- and two-family *dwellings* and *townhouses*, less than or equal to three stories above grade plane, shall be permitted to be constructed in accordance with AISI S230 subject to the limitations therein.~~

2206A.1.3 Truss design. Cold-formed steel trusses shall comply with the additional provisions of Sections 2206A.1.3.1 through 2206A.1.3.3.

[Relocated from existing Section 2211A.1.2] Complete engineering analysis and truss design drawings shall accompany the construction documents submitted to the enforcement agency for approval. When load testing is required, the test report shall be submitted with the truss design drawings and engineering analysis to the enforcement agency.

2206A.1.3.1 Truss design drawings. The truss design drawings shall conform to the requirements of Section I1 of AISI S202 and shall be provided with the shipment of trusses delivered to the job site. The truss design drawings shall include the details of permanent individual truss member restraint/bracing in accordance with Section I1.6 of AISI S202 where these methods are utilized to provide restraint/bracing.

2206A.1.3.2 Trusses spanning 60 feet or greater. The *owner* or the *owner*'s authorized agent shall contract with a *registered design professional* for the design of the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing for trusses with clear spans 60 feet (18 288 mm) or greater. *Special inspection* of trusses over 60 feet (18 288 mm) in length shall be in accordance with Section 1705.2.

2206A.1.3.3 Truss quality assurance. Trusses not part of a manufacturing process that provides requirements for quality control done under the supervision of a third-party quality control agency in accordance with AISI S240 Chapter D shall be fabricated in compliance with Sections 1704.2.5 and 1705.2, as applicable.

2206A.2 Nonstructural members. For cold-formed steel *light-frame construction*, the design and installation of nonstructural members and connections shall be in accordance with AISI S220 *[Relocated from existing Section 2211A.1.2] for noncomposite assembly design. Where nonstructural members do not qualify for design*

under AISI S220, the design and installation of nonstructural members and connections shall be in accordance with AISI S240 or S100.

2206*A*.3 Cutting and notching. The cutting and notching of holes in cold-formed steel framing members shall be in accordance with AISI S240 for structural members and AISI S220 for nonstructural members.

SECTION 2207*A* - STEEL JOISTS

2207*A*.1 General. The design, manufacture and use of open-web *steel joists* and joist girders shall be in accordance with either SJI 100 or SJI 200, as applicable.

2207*A*.1.1 Seismic design. Where required, the seismic design of *buildings* shall be in accordance with the additional provisions of Section 2202*A*.2 or 2206*A*.1.1.

2207*A*.2 Design. The *registered design professional* shall indicate on the *construction documents* the *steel joist* and *steel joist* girder designations from SJI 100 or SJI 200; and shall indicate the requirements for joist and joist girder design, layout, end supports, anchorage, bridging design that differs from SJI 100 or SJI 200, bridging termination connections and bearing connection design to resist uplift and lateral *loads*. These documents shall indicate special requirements as follows:

1. Special *loads* including:
    - 1.1. Concentrated *loads*.
    - 1.2. Nonuniform *loads*.
    - 1.3. Net uplift *loads*.
    - 1.4. Axial *loads*.
    - 1.5. End moments.
    - 1.6. Connection forces.
2. Special considerations including:
    - 2.1. Profiles for joist and joist girder configurations that differ from those defined by SJI 100 or SJI 200.
    - 2.2. Oversized or other nonstandard web openings.
    - 2.3. Extended ends.
3. Deflection criteria for joists and joist girder configurations that differ from those defined by SJI 100 or SJI 200.

2207*A*.3 Calculations. The *steel joist* and joist girder manufacturer shall design the *steel joists* and *steel joist* girders in accordance with SJI 100 or SJI 200 to support the *load* requirements of Section 2207*A*.2. The *registered design professional* shall be permitted to require submission of the *steel joist* and joist girder calculations as prepared by a *registered design professional* responsible for the product design. Where requested by the *registered design professional*, the *steel joist* manufacturer shall submit design calculations with a cover letter bearing the seal and signature of the joist manufacturer's *registered design professional*. In addition to the design calculations submitted under seal and signature, the following shall be included:

1. Bridging design that differs from SJI 100 or SJI 200, such as cantilevered conditions and net uplift.
2. Connection design for:
    2.1. Connections that differ from SJI 100 or SJI 200, such as flush-framed or framed connections.
    2.2. Field splices.
    2.3. Joist headers.

2207*A*.4 Steel joist drawings. *Steel joist* placement plans shall be provided to show the *steel joist* products as specified on the *approved construction documents* and are to be utilized for field installation in accordance with specific project requirements as stated in Section 2207*A*.2. *Steel joist* placement plans shall include, at a minimum, the following:

1. Listing of applicable *loads* as stated in Section 2207*A*.2 and used in the design of the *steel joists* and joist girders as specified in the *approved construction documents*.
2. Profiles for joist and joist girder configurations that differ from those defined by SJI 100 or SJI 200.
3. Connection requirements for:
    3.1. Joist supports.
    3.2. Joist girder supports.
    3.3. Field splices.
    3.4. Bridging attachments.
4. Deflection criteria for joists and joist girder configurations that differ from those defined by SJI 100 or SJI 200.
5. Size, location and connections for bridging.
6. Joist headers.

~~*Steel joist* placement plans do not require the seal and signature of the joist manufacturer's *registered design professional*.~~

2207A.5 Certification. At completion of manufacture, the *steel joist* manufacturer shall submit a *certificate of compliance* to the *owner* or the *owner*'s authorized agent for submittal to the *building official* as specified in Section 1704.5 stating that work was performed in accordance with *approved construction documents* and with SJI 100 or SJI 200, as applicable.

2207A.6 Joist chord bracing. *The chords of all joists shall be laterally supported at all points where the chords change direction.*

SECTION 2208*A* - STEEL DECK

2208*A*.1 Steel decks. The design and construction of cold-formed steel floor and roof decks and composite slabs of concrete and steel deck shall be in accordance with SDI SD. The design of cold-formed steel diaphragms shall be in accordance with additional

provisions of AISI S310, as applicable. *[Relocated from existing Section 2210A.1.1.2] The base material thickness of steel deck shall not be less than 0.0359 inch (0.9 mm) (20 gage).*

SECTION 2209*A* - STEEL STORAGE RACKS

2209*A*.1 General. The design, testing and utilization of steel *storage racks* made of cold-formed or hot-rolled steel structural members shall be in accordance with ANSI MH16.1. The design, testing and utilization of *steel cantilevered storage racks* made of cold-formed or hot-rolled steel structural members shall be in accordance with ANSI MH 16.3.

2209*A*.2 Seismic design. Where required by ASCE 7, the seismic design of *steel storage racks* and *cantilevered steel storage racks* shall be in accordance with Section 15.5.3 of ASCE 7.

2209*A*.3 Certification. For steel storage racks that are 8 feet (2438 mm) in height or greater to the top *load* level and assigned to *Seismic Design Category* D, E, or F at completion of the *storage rack* installation, a *certificate of compliance* shall be submitted to the *owner* or the *owner*'s authorized agent stating that the work was performed in accordance with *approved construction documents*.

SECTION 2210*A* - METAL BUILDING SYSTEMS

2210*A*.1 General. The design, fabrication and erection of a *metal building system* shall be in accordance with the provisions of this section.

2210*A*.1.1 Design. The design of *metal building systems* shall be in accordance with Sections 2210*A*.1.1.1 through 2210*A*.1.1.4, as applicable.
2210*A*.1.1.1 Structural steel. The design, fabrication and erection of structural steel shall be in accordance with Section 2202*A*.
2210*A*.1.1.2 Cold-formed steel. The design of cold-formed carbon and low-alloy steel structural members shall be in accordance with Section 2204*A*.
2210*A*.1.1.3 Steel joists. The design of *steel joists* shall be in accordance with Section 2207*A*.
2210*A*.1.1.4 Steel cable. The design, fabrication, and erection of steel cables, including related connections, shall be in accordance with Section 2214*A*.
2210.2 Seismic design. Where required, the seismic design, fabrication and erection of the structural steel seismic force-resisting system shall be in accordance with Section 2202*A*.2.1 or 2202*A*.2.2, as applicable.

SECTION 2211A - INDUSTRIAL BOLTLESS STEEL SHELVING

2211*A*.1 General. The design, testing and utilization of industrial boltless steel shelving shall be in accordance with MHI ANSI/MH 28.2. Where required by ASCE 7, the seismic

design of industrial boltless steel shelving shall be in accordance with Chapter 15 of ASCE 7.

SECTION 2212*A*—INDUSTRIAL STEEL WORK PLATFORMS

2212*A*.1 General. The design, testing and utilization of industrial steel work platforms shall be in accordance with MHI ANSI/MH 28.3. Where required by ASCE 7, the seismic design of industrial steel work platforms shall be in accordance with Chapter 15 of ASCE 7.

SECTION 2213*A* - STAIRS, LADDERS AND GUARDING FOR STEEL STORAGE RACKS AND INDUSTRIAL STEEL WORK PLATFORMS

2213*A*.1 General. The design and installation of stairs, ladders and guarding serving *steel storage racks* and industrial steel work platforms shall be in accordance with MHI ANSI/MH 32.1.

SECTION 2214*A* - STEEL CABLE STRUCTURES

2214*A*.1 General. The design, fabrication and erection including related connections, and protective coatings of steel cables for *buildings* shall be in accordance with ASCE 19. *[Relocated from existing Section 2208A.1] Steel cables with glass or polymer fabric material acting as a tensile membrane structure is an alternative system.*

SECTION ~~2213A~~ 2216A - TESTING AND FIELD VERIFICATION

2216A.1 ~~2213A.1~~ Tests of high-strength bolts, nuts, and washers. *High-strength bolts, nuts, and washers shall be sampled and tested in accordance with Section 1705A.2.6* ***[OSHPD 1 & 4]*** *and this section.*

[OSHPD 1 and 4] *A minimum of nine samples per lot, as defined in the ASTM standards for bolts [not nuts and washers], shall be tested for tensile properties in accordance with ASTM F606, but need not exceed three samples per 400 bolts.*

2216A.2 ~~2213A.2~~ Tests of end-welded studs. *End-welded studs shall be tested in accordance with the requirements of the AWS D1.1, Sections 7.7 and 7.8.*

[Existing amendments not addressed in these express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 23
WOOD

SECTION 2301 – GENERAL

2301.1 Scope. The provisions of this chapter shall govern the materials, design, construction and quality of wood members and their fasteners.

2301.1.1 Application. [OSHPD 1, 1R, 2, 4 & 5] *The scope of application of Chapter 23 is as follows:*

1. Reserved for DSA-SS.

2. Applications listed in Section 1.10, regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD). These applications include hospitals, hospital buildings removed from general acute care service, skilled nursing facilities, intermediate care facilities, ~~and~~ correctional treatment centers and acute psychiatric hospital buildings.

Exception: *For applications listed in Section 1.10.3 (Licensed Clinics), the provisions of this chapter without OSHPD amendments identified in accordance with Section 2301.1.2 shall apply.*

2301.1.2 Amendments in this chapter. [OSHPD 1, 1R, 2, 4 & 5]
OSHPD adopt this chapter ~~and all amendments~~ as amended.

~~Exception: Amendments adopted by OSHPD only one agency appears in this chapter preceded with the appropriate acronym of the adopting agency, as follows:~~

2301.1.3 Identification of amendments.

1. Reserved for DSA-SS.

2. Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD) amendments appear in this chapter preceded by the appropriate acronym, as follows:

[OSHPD 1] *- For applications listed in Section 1.10.1.*
[OSHPD 1R] *- For applications listed in Section 1.10.1.*
[OSHPD 2] *- For applications listed in Section 1.10.2.*
[OSHPD 4] *- For applications listed in Section 1.10.4.*
[OSHPD 5] *- For applications listed in Section 1.10.5.*

2301.1.4 ~~2301.1.3~~ [OSHPD 1 & 4] Reference to other chapters.
2301.1.4.1 ~~2301.1.3.1~~ [OSHPD 1 & 4] *Where reference within this chapter is made to sections in Chapters 16, 17, 18, 19, 21 and 22, the provisions in Chapters 16A, 17A, 18A, 19A, 21A and 22A, respectively shall apply instead.*

2301.1.4.2 ~~2301.1.3.2~~ *Reserved for DSA-SS.*

2301.1.5 ~~***2301.1.4***~~ ***Prohibition. [OSHPD 1, 1R, 2, 4 & 5]*** *The following design methods, systems and materials are not permitted by OSHPD:*

1. Straight-sheathed horizontal lumber diaphragms.
2. Gypsum-based sheathing shear walls and Portland cement plaster shear walls.
3. Shear wall foundation anchor bolt washers in accordance with exception to AWC SDPWS Section 4.3.6.4.3.
4. Wood structural panel shear walls and diaphragms using staples as fasteners.
5. Unblocked shear walls.
6. Any wood structural panel sheathing used for diaphragms and shear walls that are part of the seismic force-resisting system, not applied directly to framing members.
7. Single and double diagonally sheathed lumber walls used to resist seismic forces.
8. Log structures in accordance with ICC 400.
~~*9. Cross-laminated timber used as part of the seismic force-resisting system, unless approved as an alternative system in accordance with Section 104.11.*~~

…

SECTION 2303 - MINIMUM STANDARDS AND QUALITY

2303.1 General. Structural sawn lumber; end-jointed lumber; *prefabricated wood I-joists*; *structural glued-laminated timber*; *cross-laminated timber*; *wood structural panels*; *fiberboard* sheathing (where used structurally); *hardboard* siding (where used structurally); *particleboard*; *preservative-treated wood*; structural log members; *structural composite lumber*; round timber poles and piles; *fire-retardant-treated wood*; hardwood *plywood*; wood trusses; joist hangers; nails; and staples shall conform to the applicable provisions of this section.

…

2303.1.4 Cross-laminated timber. *Cross-laminated timbers* shall be manufactured and identified in accordance with ANSI/APA PRG 320.

2303.1.4.1 Additional requirements. [OSHPD 1, 1R, 2, 4 & 5] *Requirements in Section 2303.1.3.1 shall apply to* ~~*glued*~~ *cross-laminated timber.*

SECTION 2305 - GENERAL DESIGN REQUIREMENTS FOR LATERAL FORCE-RESISTING SYSTEMS

2305.1 General. *Structures* using wood *shear walls* or wood *diaphragms* to resist wind or seismic *loads* shall be designed and constructed in accordance with AWC SDPWS and the applicable provisions of Sections 2305, 2306 and 2307.

2305.1.1 Openings in shear panels. Openings in shear panels that materially affect their strength shall be detailed on the plans and shall have their edges adequately reinforced to transfer all shearing stresses.

2305.1.2 Permanent load duration. Permanent loads are associated with permanent load duration in accordance with the ANSI/AWC NDS. For wood *shear walls* and wood diaphragms designed to resist lateral loads of permanent load duration only and that are not in combination with wind or seismic lateral loads, the design unit shear capacities shall be taken as the AWC SDPWS nominal unit shear capacities, multiplied by 0.2 for use with a*llowable stress design* in Section 2306 and 0.3 for use with *load and resistance factor design* in Section 2307.

2305.1.3 ~~***2305.1.2***~~ ***Additional requirements. [OSHPD 1, 1R, 2, 4 & 5]*** *See Section 2301.1.4 for modifications to AWC SDPWS.*

…

SECTION 2308 - CONVENTIONAL LIGHT-FRAME CONSTRUCTION

2308.1 General. The requirements of this section are intended for *buildings* of *conventional light-frame construction* not exceeding the *story* height limitations of Section 2308.2.1. Other construction methods are permitted to be used, provided that a satisfactory design is submitted showing compliance with other provisions of this code. Interior nonload-bearing partitions, ceilings and curtain walls of *conventional light-frame construction* are not subject to the limitations of Section 2308.2. Detached one- and two-family *dwellings* and *townhouses* not more than three *stories above grade plane* in height with a separate *means of egress* and their accessory *structures* shall comply with the *International Residential Code*.

…

2308.2 Limitations. *Buildings* are permitted to be constructed in accordance with the provisions of *conventional light-frame construction*, subject to the limitations in Sections 2308.2.1 through 2308.2.7 ***[OSHPD 1, 1R, 2, 4 & 5]*** 2308.2.8.

…

2308.2.6 Risk category limitation. The use of the provisions for *conventional light-frame construction* in this section shall not be permitted for *Risk Category* IV *buildings* assigned to a *Seismic Design Category* other than A.

2308.2.7 Hillside light-frame construction. Design in accordance with Section 2308.3 shall be provided for the floor immediately above the cripple walls or post and beam systems and all structural elements and connections from this floor down to and including connections to the foundation and design of the foundation

to transfer lateral loads from the framing above in *buildings* where all of the following apply:

1. The grade slope exceeds 1 unit vertical in 5 units horizontal where averaged across the full length of any side of the *building.*
2. The tallest *cripple wall clear height* exceeds 7 feet (2134 mm); or, where a post and beam system occurs at the *building* perimeter, the post and beam system tallest post clear height exceeds 7 feet (2134 m).
3. Of the total plan area below the lowest framed floor, whether open or enclosed, less than 50 percent is *occupiable space* having interior wall finishes conforming to Section 2304.7 or Chapter 25.

Exception: Light-frame *buildings* in which the lowest framed floor is supported directly on concrete or *masonry* walls over the full length of all sides except the downhill side of the *building* are exempt from this provision.

2308.2.8 ~~***2308.2.7***~~ ***Additional requirements [OSHPD 1, 1R, 2, 4 & 5]*** *The use of conventional light-frame construction provisions in this section is permitted, subject to the following conditions:*

1. *The design and construction shall also comply with Section 2304 and Section 2305.*
2. *In conjunction with the use of provisions in Section ~~2308.6~~ 2308.10 (Wall bracing), engineering analysis shall be furnished that demonstrates compliance of lateral force- resisting systems with Section 2305.*
3. *In addition to the use of provisions in Section ~~2308.4~~ 2308.8 (Floor framing), engineering analysis shall be furnished that demonstrates compliance of floor framing elements and connections with Section 2302.1, Item 1 or 2.*
4. *In addition to the use of provisions in Section ~~2308.5~~ 2308.9 (Wall construction), engineering analysis shall be furnished that demonstrates compliance of wall framing elements and connections with Section 2302.1, Item 1 or 2.*
5. *In addition to the use of provisions in Section ~~2308.7~~ 2308.11 (Roof and Ceiling Framing), engineering analysis shall be furnished demonstrating compliance of roof and ceiling framing elements and connections with Section 2302.1, Item 1 or 2.*

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 24
GLASS AND GLAZING

SECTION 2401 – GENERAL

2401.1 Scope. The provisions of this chapter shall govern the materials, design, construction and quality of glass, light-transmitting ceramic and light-transmitting plastic panels for exterior and interior use in both vertical and sloped applications in *buildings* and *structures*. Light-transmitting *plastic glazing* shall also meet the applicable requirements of Chapter 26.

2401.1.1 Application. [OSHPD 1, 1R, 2, 4 & 5] *The scope of application of Chapter 24 is as follows:*
1. Applications listed in Sections 1.10.1, 1.10.2, 1.10.4 and 1.10.5 regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD). These applications include hospitals, hospital buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility buildings, correctional treatment centers and acute psychiatric hospital buildings.
.
2. Reserved for DSA-SS.

2401.1.2 Amendments in this chapter. [OSHPD 1, 1R, 2, 4 & 5] *OSHPD adopt this chapter ~~and all amendments~~ as amended.*

~~Exception:~~ *~~Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:~~*

1. OSHPD amendments appear in this chapter preceded with the appropriate acronym, as follows:

[OSHPD 1] *- For applications listed in Section 1.10.1.*
[OSHPD 1R] *- For applications listed in Section 1.10.1.*
[OSHPD 2] *- For applications listed in Section 1.10.2.*
[OSHPD 4] *- For applications listed in Section 1.10.4.*
[OSHPD 5] *- For applications listed in Section 1.10.5.*

2. Reserved for DSA-SS.

…

SECTION 2410 - STRUCTURAL SEALANT GLAZING (SSG) [OSHPD 1, 1R, 2, 4 & 5]

2410.1 General. *The requirements of this section address the use of structural sealant glazing (SSG). These requirements shall not be used for butt joint glazing, point supported glass and glass fins.*

Design, construction, testing and inspection shall satisfy the requirements of this code except as modified in Sections 2410.1.1 through 2410.1.4.

…

2410.1.3 Monitoring. *Short- and long-term periodic performance monitoring shall be provided in accordance with ASTM C1401, C1392 and C1394~~. Inspection~~ at frequencies recommended in ASTM C1394. ~~shall be followed.~~*

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 25
GYPSUM PANEL PRODUCTS AND PLASTER

SECTION 2501—GENERAL

2501.1 Scope. Provisions of this chapter shall govern the materials, design, construction and quality of *gypsum panel products*, lath, *gypsum plaster*, *cement plaster* and reinforced gypsum concrete.

2501.1.1 Application. [OSHPD 1, 1R, 2, 4 & 5] *The scope of application of Chapter 25 is as follows:*

1. Applications listed in Sections 1.10.1, 1.10.2, 1.10.4 and 1.10.5 regulated by the Office of Statewide ~~Health~~ Hospital Planning and Development (OSHPD). These applications include hospitals, hospital buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility buildings, correctional treatment centers and acute psychiatric hospital buildings.

2. Reserved for DSA-SS.

2501.1.2 Amendments in this chapter. [OSHPD 1, 1R, 2, 4 & 5] *OSHPD adopt this chapter ~~and all amendments~~ as amended.*

~~Exception:~~ *~~Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:~~*

1. OSHPD amendments appear in this chapter preceded with the appropriate acronym, as follows:

***[OSHPD 1]** - For applications listed in Section 1.10.1.*
***[OSHPD 1R]** - For applications listed in Section 1.10.1.*
***[OSHPD 2]** - For applications listed in Section 1.10.2.*
***[OSHPD 4]** - For applications listed in Section 1.10.4.*
***[OSHPD 5]** - For applications listed in Section 1.10.5.*

2. Reserved for DSA-SS.

…

SECTION 2503 – INSPECTION

2503.1 Inspection. Lath and *gypsum panel products* shall be inspected in accordance with Section 110.3.6.

2503.2 Additional requirements for inspection and testing. [OSHPD 1, 1R, 2, 4 & 5]
1. Lath, gypsum board and gypsum panel products shall be inspected in accordance with Chapter 17A and the California Administrative Code.
2. No lath, gypsum board and gypsum panel products or their attachments shall be covered or finished until it has been inspected and approved by the inspector of record and/or special inspector.
3. The enforcement agency ~~may~~ shall be permitted to require tests in accordance with Table 2506.2 to determine compliance with the provisions of this code.
4. The testing of gypsum board and gypsum panel products shall conform with standards listed in Table 2506.2

***Exception: [OSHPD 2]** Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light-steel-frame construction.*

…

SECTION 2507—LATHING AND PLASTERING

2507.1 General. Lathing and plastering materials and accessories shall be marked by the manufacturer's designation to indicate compliance with the appropriate standards referenced in this section and stored in such a manner to protect them from the weather.

…

2507.3 Lath attachment to horizontal wood supports. [OSHPD 1, 1R, 2, 4 & 5]
Where interior or exterior lath is attached to horizontal wood supports, either of the following attachments shall be used in addition to the methods of attachment described in referenced standards listed in Table 2507.2.

1. Secure lath to alternate supports with ties consisting of a double strand of No. 18 W & M gage galvanized annealed wire at one edge of each sheet of lath. Wire ties shall be installed not less than 3 inches (76 mm) back from the edge of each sheet and shall be looped around stripping, or attached to an 8d common wire nail driven into each side of the joist 2 inches (51 mm) above the bottom of the joist or to each end of a 16d common wire nail driven horizontally through the joist 2 inches (51 mm) above the bottom of the joist and the ends of the wire secured together with three twists of the wire.

2. Secure lath to each support with 1/2-inch-wide (12.7 mm), 11/2-inch-long (38mm) No. 9 W & M gage, ring shank, hook staple placed around a 10d common nail laid flat under the surface of the lath not more than 3 inches (76 mm) from edge of each sheet. Such staples may be placed over ribs of 3/8-inch (9.5 mm) rib lath or over back wire of welded wire fabric or other approved lath, omitting the 10d nails. 1 ½" long screws shall be permitted to be used in lieu of the staples if they include a minimum 1 inch diameter head or are installed with a 1-inch diameter washer.

***~~Exception: [OSHPD 2]~~** ~~Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light-steel-frame construction.~~*

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

ITEM [Insert Item #]

CHAPTER 26
PLASTIC
SECTION 2601 – GENERAL

2601.1 Scope. These provisions shall govern the materials, design, application, construction and installation of foam plastic, *foam plastic insulation*, plastic *veneer*, interior plastic finish and *trim*, light-transmitting plastics and plastic composites, including *plastic lumber*.

***~~2601.1.1 Application. [OSHPD]~~** ~~The scope of application of Chapter 26 is as follows: 1. Applications listed in Sections 1.10.1, 1.10.2, 1.10.4 and 1.10.5 regulated by the Office of Statewide Health Planning and Development (OSHPD). These applications include hospitals, hospital buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility buildings, correctional treatment centers and acute psychiatric hospital buildings.~~*

~~***2601.1.2 Amendments in this chapter. [OSHPD]*** *OSHPD adopt this chapter and all amendments.*~~

> ~~***Exception:*** *Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:*~~
> ~~*1. OSHPD amendments appear in this chapter preceded with the appropriate acronym, as follows:*~~
> ~~***[OSHPD 1]*** *- For applications listed in Section 1.10.1.*~~
> ~~***[OSHPD 1R]*** *- For applications listed in Section 1.10.1.*~~
> ~~***[OSHPD 2]*** *- For applications listed in Section 1.10.2.*~~
> ~~***[OSHPD 4]*** *- For applications listed in Section 1.10.4.*~~
> ~~***[OSHPD 5]*** *- For applications listed in Section 1.10.5.*~~

…

SECTION 2603 - FOAM PLASTIC INSULATION

2603.1 General. The provisions of this section shall govern the requirements and uses of *foam plastic insulation* in *buildings* and *structures*.

…

~~***2603.11.1 Additional requirements. [OSHPD 1, 1R, 2, 4 & 5]*** *In addition to the requirements of Section 2603.11, cladding and foam sheathing supports and attachments shall be designed and submitted to the enforcement agency for approval.*~~

…

~~***2603.12.3 Additional requirements. [OSHPD 1, 1R, 2, 4 & 5]*** *In addition to the requirements of Section 2603.12, 2603.12.1 and 2603.12.2, cladding and foam sheathing supports and attachments shall be designed and submitted to the enforcement agency for approval.*~~

…

~~***2603.13.3 Additional requirements. [OSHPD 1, 1R, 2, 4 & 5]*** *In addition to the requirements of Section 2603.13, 2603.13.1 and 2603.13.2, cladding and foam sheathing supports and attachments shall be designed and submitted to the enforcement agency for approval.*~~

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

…

ITEM [Insert Item #]

CHAPTER 31– SPECIAL CONSTRUCTION

SECTION 3101 – GENERAL

3101.1 Scope. The provisions of this chapter shall govern special building construction including membrane structures, temporary structures, pedestrian walkways and tunnels, automatic vehicular gates, awnings and canopies, marquees, signs, towers, antennas, relocatable buildings, swimming pool enclosures and safety devices, solar energy systems, public use restroom buildings on publicly owned lands in flood hazard areas and intermodal shipping containers.

…

SECTION 3115 - INTERMODAL SHIPPING CONTAINERS

[OSHPD 1, 1R, 2, 4 & 5] *Not permitted by OSHPD*.

…

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850

…

ITEM [Insert Item #]

CHAPTER 35
REFERENCED STANDARDS

User note:

About this chapter: The California Building Code *contains numerous references to standards promulgated by other organizations that are used to provide requirements for materials and methods of construction. This chapter contains a comprehensive list of all standards that are referenced in this code. These standards, in essence, are part of this code to the extent of the reference to the standard.*

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Chapter 1, Scope and Administration, Division 1, Sections 1.1.5 and 1.1.7, and in Chapter 1, Scope and Administration, Division II, Section 102.4, *as applicable.*

[OSHPD 1 & 4] Reference to other chapters. *In addition to the code sections referenced, the standards listed in this chapter are applicable to the respective code sections in Chapters 16A, 17A, 18A, 19A, 21A and 22A.*

…

ACI *American Concrete Institute, 38800 Country Club Drive, Farmington Hills, MI 48331-3439*

…

355.4—19 (21): Qualification of Post-Installed Adhesive Anchors in Concrete and Commentary

1617A.1.19, 1901.3.3

…

440.2R-~~08~~ 17: Guide for the Design and Construction of Externally Bonded FRP Systems for Strengthening Concrete Structures

1911.3, 1911A.3

…

~~503.7—07: Specification for Crack Repair by Epoxy Injection~~

~~1911.2, 1911A.2~~

…

506.2-13 (18): Specification for Shotcrete

1908.1, 1908A.1

506.4R – ~~94~~ 19: ~~[OSHPD]~~ Guide for the Evaluation of Shotcrete

1908.1, 1908A.1

506.6T—17: ~~[OSHPD]~~ Visual Shotcrete Core Quality Evaluation

1908.1, 1908A.1

…

SPEC-548.15-20: Specification for Crack Repair by Epoxy Injection
1911.2, 1911A.2

…

AISC *American Institute of Steel, 130 East Randolph Street, Suite 2000, Chicago, IL 60601-6219*

…

ANSI/AISC 358—22: Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications

2202.2.1, 2202.2.1.2, 2202.3, 2202A.3

…

ASCE/SEI *American Society of Civil Engineers Structural Engineering Institute, 1801 Alexander Bell Drive, Reston, VA 20191*

7 - 2022: Minimum Design Loads and Associated Criteria for Buildings and Other Structures *with Supplement 1*

…

37-2017: Design Loads on Structures During Construction
1617A.1.18

…

41 - ~~13~~ 23: ~~[OSHPD]~~ Seismic Evaluation and Retrofit of Existing Buildings
1603A.2

…

ASHRAE *ASHRAE, 180 Technology Parkway, Peachtree Corners, GA 30092*

…

171-2017: Method Of Testing for Rating Seismic and Wind Restraints
1705.14.2, 1705A.14.2

…

ASTM *ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428*

…

A615/A615M - ~~20~~ *22*: Standard Specification for Deformed and Plain Carbon-Steel Bars for Concrete Reinforcement
1704.5, 1810.3.10.2

…

A706/A706M- ~~2016~~ *22a*: Standard Specification for Deformed and Plain Low-Alloy Steel Bars for Concrete Reinforcement
1704.5, Table 1705.3, 2107.3, 2108.3

…

~~**A722/A722M - 2015: [OSHPD]: Specification for High-strength Steel Bars for Prestressed Concrete**~~
~~1810.3.10.2, *1811.4, 1811A.4, 1812.4.2, 1812A.4.2*~~

A722/A722M - 2018: Specification for High-Strength Steel Bars for Prestressed Concrete
1810.3.10.2, *1811.4, 1811A.4, 1812.4.2, 1812A.4.2*

…

A1064 - ~~17~~ 22: Standard Specification for Carbon-steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete
1903.8, 1903A.8

…

C482 – 20: Standard Test Method for Bond Strength of Ceramic Tile to Portland Cement Paste
1413.2.1

…

C618 - ~~15~~ 23e1: ~~[OSHPD]~~ Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete
1909.2.3, 1910A.1

…

~~**C635/C635M - *13a: [OSHPD]* Specification for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel Ceilings**~~

~~*1617A.1.21*~~

C635/C635M – ~~2017~~ *22*: Specification for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings

2506.2.1, *1617A.1.21*

C636/C636M - 19: Practice for Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels

808.1.1.1, *1617A.1.21*

…

~~***C989—16e1: [OSHPD] Standard Specification for Slag Cement for Use in Concrete and Mortars***~~

~~*1910.2.1, 1910A.1*~~

C989 - ~~16e1~~ 22: Standard Specification for Slag Cement for Use in Concrete and Mortars

1909.2.3, 1910.2.1, 1910A.1

…

C1019 - ~~16~~ 20: Test Method for Sampling and Testing Grout

2105A.3, 2105.3, 2115.8.1

…

C1249—18 (2023): Standard Guide for Secondary Seal for Sealed Insulated Glass Units for Structural Sealant Glazing Applications

2410.1.1

…

C1401 - ~~14~~ 23: Standard Guide for Structural Sealant Glazing

2410.1

…

C1586 - ~~05(2011)~~ 20: Standard Guide for Quality Assurance of Mortars

2105.3

…

ASTM C1714/C1714M-23: Standard Specification for Preblended Dry Mortar Mix for Unit Masonry

2105A.3

…

D1586 - ~~20~~ 18e1: Standard Test Method for Standard Penetration Test (SPT) and Split-Barrel Sampling of Soils

1813, 1813A.2

…

D3966 - ~~07(2013)~~ 22: Standard Test Method for Deep Foundations Under Lateral Loads

1810A.3.3.2

…

E580/E580M – ~~17~~ 22: Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions

1617.11.16, 1617A.1.21

…

F606/F606M - ~~16~~ 21: Standard Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets

2213.1, *2213A.1*

AWS *American Welding Society8669 NW 36 Street, #130Miami, FL 33166-6672*

B5.1 - 2013-AMD1 Specification for the Qualification of Welding Inspectors

1705.2.7, 1705A.2.7

D1.1/D1.1M – ~~15~~ 20: Structural Welding Code - Steel

~~Table 1705A.2.1, 1705A.2.5,~~ 1704.5, Table 1705.3, 1705.3.1, 2107.3, *2201.4.1 ~~2204.1.1, 2204A.1.1, 2212.6.2,~~ 2213.2, 2213A.2*

…

D1.3/D1.3M - ~~08~~ 2018: Structural Welding Code - Sheet Steel

~~Table 1705A.2.1, 1705A.2.5~~ 1705.2.7, 1705A.2.7

D1.4/D1.4M - 2018-AMD1: Structural Welding Code - Steel Reinforcing Bars

1705.2.7, 1705A.2.7 ~~1704.5, *1704A.5,* Table 1705.3, Table 1705A.3, *1705A.2.1, 1705A.2.5,* Table 1705.3, 1705.3.1, *1705A.3.1, 1903.8, 1903A.8,*~~ *1903.4, 1903A.4~~, ~~2107.3~~

AWS D1.6/D1.6M – 2017: Structural Welding Code-Stainless Steel

1705A.2.7

D1.8/D1.8M - ~~2016~~ 2021: Structural Welding Code - Seismic Supplement
~~Table 1705A.2.1,~~ 1705.2.5, 1705A.2.5

QC1 - 2016: Specification for AWS Certification of Welding Inspectors
~~1705.2.5, 1705A.2.5~~ 1705.2.7, 1705A.2.7

…

FM *FM Approvals, Headquarters Office 1151 Boston-Providence Turnpike P.O. Box 9102, Norwood, MA 02062*

…

FM 1950 - ~~2016~~ 2022: American National Standard for Seismic Sway Braces for Pipe, Tubing and Conduit
1705.14.2, 1705A.14.2

…

ICC *International Code Council, Inc., 200 Massachusetts Avenue, NW, Suite 250, Washington, DC 20001*

1200-2021: Standard for Off-Site Construction: Planning, Design, Fabrication and Assembly
1710, 1710A

1205-2021: Standard for Off-Site Construction: Inspection and Regulatory Compliance
1710, 1710A

…

ICC-ES AC 01 - ~~21~~ 24**: Acceptance Criteria for Expansion Anchors in Masonry Elements
1617A.1.19
ICC-ES AC 58 - ~~21~~ 24**: Acceptance Criteria for Adhesive Anchors in Masonry Elements
1617A.1.19
ICC-ES AC 70 - ~~21~~ 24**: Acceptance Criteria for Fasteners Power-Driven into Concrete, Steel and Masonry Elements
1617A.1.20

…

ICC-ES AC 106 - ~~21~~ 24**: Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry
1617A.1.19

ICC-ES AC 125 - ~~21~~ 24**: Acceptance Criteria for Concrete and Reinforced and Unreinforced Masonry Strengthening
Using Externally Bonded Fiber-Reinforced Polymer (FRP) Composite Systems
1911A.3, 1911.3

ICC-ES AC 156 - ~~21~~ 24**: Acceptance Criteria for Seismic Certification by Shake-Table Testing of Nonstructural Components
1705A.14.3

ICC-ES AC 178 - ~~21~~ 24**: Acceptance Criteria for Inspection and Verification of Concrete, and Reinforced and Unreinforced Masonry
Strengthening Using Fiber-Reinforced Polymer (FRP) Composite Systems
1911A.3, 1911.3
ICC-ES AC 193 - ~~21~~ 24**: Acceptance Criteria for Mechanical Anchors in Concrete Elements
1617A.1.19, 1901.3.2
ICC-ES AC 232 - ~~21~~ 24**: Acceptance Criteria for Anchor Channels in Concrete Elements
1617A.1.19, 1901.3.2
ICC-ES AC 308 - ~~21~~ 24**: Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements
1617A.1.19, 1901.3.3

…

ICC-ES AC 358 - ~~21~~ 24**: Acceptance Criteria for Helical Foundation Systems and Devices
1810A.3.1.5.1, 1810.3.1.5.1
ICC-ES AC 446 - ~~21~~ 24*: Acceptance Criteria for Headed Cast-in Specialty Inserts in Concrete
1617A.1.19, 1901.3.2

** Refers to International Building Code, ~~2021~~ 2024 as a reference standard.*

~~NEHRP~~ *~~Building Seismic Safety CouncilNational Institute of Building Sciences, 1090 Vermont Avenue NW Suite 700, Washington, DC 20005~~*

~~FEMA P-2082—1: Recommended Seismic Provisions for New Building and Other Structures, Volume 1, September 2020~~

[Existing amendments not addressed in the express terms shall remain unchanged]

Notation:

Authority: Health and Safety Code, Sections 1275, 129675-130070
Reference(s): Health and Safety Code, Section 129850