FINAL EXPRESS TERMS
FOR PROPOSED BUILDING STANDARDS
OF THE DIVISION OF THE STATE ARCHITECT –STRUCTURAL SAFETY (DSA-SS AND DSA-SS/CC)
REGARDING THE 2019 CALIFORNIA BUILDING CODE
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 2

(DSA-SS/CC 02/18)

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)).

The Division of the State Architect (DSA) proposes to adopt the 2018 edition of the International Building Code (IBC 2018) of International Code Council for codification and effectiveness in the 2018 edition of the California Building Code as presented on the following pages, including any necessary amendments. DSA further proposes to:

- Adopt new building standards that are not addressed by the 2018 model code proposed for adoption.
- Adopt new necessary amendments to the 2018 model code proposed for adoption.
- Relocate existing adopted and necessary amendments of the current model code into the format of the 2018 model code proposed for adoption. These amendments with editorial changes only are outside the rulemaking and are not subject to public comments. All amendments shown in *italics* or shown in ~~strikeout and highlight~~ are existing and are not part of the rulemaking.

LEGEND FOR EXPRESS TERMS

1. Model Code language appears upright.
2. Existing California amendments appear in *italics*.
3. Amended model code or new California amendments appear *underlined and in italics*.
4. Repealed model code language appears ~~upright and in strikeout~~.
5. Repealed California amendments appear in ~~*italics* and *strikeout*~~.
6. Existing deletion: IBC model code language that was deleted in the previous Code Adoption Cycles is shown for clarity only. This language appears in ~~strikeout and highlight~~.
7. Amendments to ACI 318 in Chapter 19 and Chapter 19A: Model code contains some amendments to ACI 318 in Sections 1903 through 1905; this amendment language appears in italics in these sections. Therefore, DSA-SS amendment language in Sections 1903A through 1905A appears in *italics and underline*.
8. Existing amendments in Chapter 19A: Deletion of existing DSA-SS amendment language in Sections 1903A through 1905A appears in ~~*italics, underline and strikeout.*~~ DSA-SS amendment language in Sections 1903A through 1905A that

was included in the previous Code Adoption Cycles is shown for clarity only. This language appears in *italics, underline and highlight*.

9. Instructions: Text which contains instructions only that are not amendments and will not be printed appears in upright text with highlight or *italic text with highlight.*

Note:
Following each chapter of the proposed regulations is a notation that cites specific statute(s) that authorizes the adoption of these regulations and statute that allows for regulations to clarify the subject matter being implemented, interpreted or made specific by the authority statute(s).

FINAL EXPRESS TERMS

CHAPTER 1
SCOPE AND ADMINISTRATION

Carry forward existing California amendments in *Chapter 1, Scope and Administration*, from the 2016 California Building Code for adoption into the 2019 California Building Code with DSA proposed revisions as shown below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt only those sections that are listed below	**X**	**X**	
1.1	X	X	
1.9.2	X	X	
1.9.2.1	X	-	
1.9.2.2	-	X	
102.1	X	X	
102.2-102.4	X	X	
102.4.1	X	X	
102.4.2	X	X	
102.4.3-102.4.4	X	X	

102.5	X	X	
104.9	X	X	
104.10	X	X	
104.11	X	X	
106.1	X	X	
106.1.1	X	X	
107.2.5	X	X	
~~*107.2.7*~~	~~X~~	~~X~~	
110.3.6	X	X	
~~*110.3.8.1*~~	~~X~~	~~X~~	

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, 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 ~~2015~~ 2018 International Building Code of the International Code Council with necessary California amendments.

1.1.2 Purpose.
The purpose of this code…

…

1.1.8 City, county, or city and county amendments, additions or deletions.
The provisions of this code…

…

1.1.8.2 Locally adopted energy standards-California Energy Code, Part 6.

In addition to the provisions of Section 1.1.8.1 of this part, the provisions of this section shall apply to cities, counties, and ~~city~~ cities and counties amending adopting local energy standards applicable to buildings and structures subject to the California Energy Code, Part 6.

Applicable provisions of Public Resources Code Section 25402.1(h)(2) and applicable provisions of Section 10-106, Chapter 10 of the California Administrative Code, Part 1 apply to locally adopted energy standards amending the California Energy Code, part 6.

…

1.9.2 Division of the State Architect—Structural Safety.

1.9.2.1 DSA-SS Division of the State Architect-Structural Safety.

Application—*Public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.*

Enforcing agency—*The Division of the State Architect- Structural Safety (DSA-SS) has been delegated the responsibility and authority by the Department of General Services to review and approve the design and observe the construction of public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.*

Authority cited—*Education Code Sections 17310 and 81142 and Health and Safety Code Section 16022.*

Reference—*Education Code Sections 17280 through 17317, and 81130 through 81147 and Health and Safety Code Sections 16000 through 16023.*

1.9.2.1.1 Applicable administrative standards.

1. ***Title 24, Part 1, California Code of Regulations:***
   1.1. *Sections 4-301 through 4-355, Group 1, and Sections 4-401 through 4-435, Group 2, Chapter 4, for public elementary and secondary schools and community colleges.*
   1.2. *Sections 4-201 through 4-249, Chapter 4, for state-owned or state-leased essential services buildings.*
2. ***Title 24, Part 2, California Code of Regulations:*** *[applies to public elementary and secondary schools, community colleges and state-owned or state-leased essential services building(s)]:*

2.1. Sections 1.1 and 1.9.2.1 of Chapter 1, Division I.

2.2. Sections 102.1, 102.2, 102.3, 102.4, 102.5, 104.9, 104.10, 104.11 and 106.1, ~~107.2.7~~ 107.2.5 and ~~110.3.8.1~~ 110.3.6 of Chapter 1, Division II.

…

1.9.2.2 DSA-SS/CC Division of the State Architect-Structural Safety/Community Colleges

Application—*Community Colleges. The Division of the State Architect has been delegated the authority by the Department of General Services to promulgate alternate building standards for application to community colleges, which a community college may elect to use in lieu of standards promulgated by DSA-SS in accordance with Section 1.9.2.1.*

Enforcing agency—*Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC)*

The Division of the State Architect has been delegated the authority by the Department of General Services to review and approve the design and oversee construction of community colleges electing to use the alternative building standards as provided in this section.

Authority cited—*Education Code Section 81053.*

Reference—*Education Code Sections 81052, 81053, and 81130 through 81147.*

1.9.2.2.1 Applicable administrative standards.

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

   1.1. Sections 4-301 through 4-355, Group 1, and Sections 4-401 through 4-435, Group 2, Chapter 4.

2. ***Title 24, Part 2, California Code of Regulations:***

   2.1. Sections 1.1 and 1.9.2 of Chapter 1, Division I.

   2.2. Sections 102.1, 102.2, 102.3, 102.4, 102.5, 104.9, 104.10, 104.11, 106.1, ~~107.2.7~~ 107.2.5 and ~~110.3.8.1~~ 110.3.6 of Chapter 1, Division II.

…

DIVISION II
SCOPE AND ADMINISTRATION

…

SECTION 102
APPLICABILITY

…

[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*.

…

SECTION 106
FLOOR AND ROOF DESIGN LOADS

…

***106.1.1 Snow load posting**. [DSA-SS, DSA-SS/CC]* *When design snow loads at exterior balconies, decks and other elevated walking surfaces exceed 50 psf, the design s~~S~~now loads ~~used in design~~ shall be posted as for live loads. When design roof (not ground) snow loads exceed 20 psf, the roof design snow loads for each roof level of the building shall similarly be conspicuously posted with signs stating the maximum design roof snow loads.*

…

SECTION 107
SUBMITTAL DOCUMENTS

…

[A]107.2.5 Exterior balconies and elevated walking surfaces. Where balconies or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, the construction documents shall include details for all elements of the impervious moisture barrier system. The construction documents shall include manufacturer's installation instructions.

…

~~**107.2.7 *Exterior balconies and elevated walking surfaces.* [DSA-SS, DSA-SS/CC**~~
~~*Where balconies or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, the construction documents shall include details for all elements of the impervious moisture barrier system. The construction documents shall include manufacturer's installation instructions.*~~

…

SECTION 110
INSPECTIONS

…

[A]110.3.6 Weather-exposed balcony and walking surface waterproofing. Where balconies or other elevated walking surfaces are exposed to water from direct or blowing rain, snow or irrigation, and the structural framing is protected by an impervious moisture barrier, all elements of the impervious moisture barrier system shall not be concealed until inspected and approved.

> **Exception:** Where special inspections are provided in accordance with Section 1705.1.1, Item 3.

…

~~***110.3.8.1 Weather exposed balcony and walking surface waterproofing. [BSC, DSA-SS, DSA-SS/CC, HCD 1, HCD 2]*** *Where balcony or other elevated walking surfaces are exposed to water from direct or blowing rain, snow, or irrigation, and the structural framing is protected by an impervious moisture barrier, all elements of the impervious moisture barrier system shall not be concealed until inspected and approved.*~~

~~***Exception:*** *Where special inspections are provided in accordance with Section 1705A.1.1, Item 3.*~~

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 2
DEFINITIONS

Adopt Chapter 2 of the 2018 IBC as amended below, including some definitions previously contained in other chapters that are being relocated to Chapter 2. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter as amended (amended sections listed below)	**X**	**X**	
Active Earthquake Fault	X	X	Relocated from 2016 CBC 1613A.2
Active Equipment/Component	X	X	
Approved Agency	X	X	
Base	X	X	Relocated from 2016 CBC 1613A.2
Distance from an Active Earthquake Fault	X	X	Relocated from 2016 CBC 1613A.2
Enforcement	X	X	
Equipment	X	X	
High-Rise Building	X	X	Relocated from 2016 CBC 1613A.2
Irregular Structure	X	X	Relocated from 2016 CBC 1613A.2
Next Generation Attenuation West 2 (NGA West 2)	X	X	
Project Inspector	X	X	Relocated from 2016 CBC 1702A.1
Quality Assurance (QA)	X	X	Relocated from 2016 CBC 1702A.1
Quality Control (QC)	X	X	Relocated from 2016 CBC 1702A.1
Retrofit	X	X	

Rugged Equipment	X	X	
Special Inspection	X	X	Relocated from 2016 CBC 1702A.1
Significant Loss of Function	X	X	
Torque-controlled post-installed anchor	X	X	
Wall: *Hollow-unit masonry wall*	X	X	

…

SECTION 202
DEFINITIONS

…

(Relocated from 1613A.2) ACTIVE EARTHQUAKE FAULT. [DSA-SS, DSA-SS/CC] *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.*

…

(Relocated from 1613A.2) BASE. [DSA-SS, DSA-SS/CC] *See ASCE 7.*

…

(Relocated from 1613A.2) DISTANCE FROM AN ACTIVE EARTHQUAKE FAULT. [DSA-SS, DSA-SS/CC] *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.*

…

EQUIPMENT [DSA-SS, DSA-SS/CC]. *Equipment as used in this part and all applicable parts of the California Building Standards Code shall be classified as fixed equipment, mobile or movable equipment.*

*(1) **FIXED EQUIPMENT** includes items that are permanently affixed to the building or permanently connected to a service distribution system that is designed and installed for the specific use of the equipment.*

*(2) **MOVABLE EQUIPMENT** means equipment, with or without wheels or rollers, that typically remains in one fixed location during its service life or use, but is required to be periodically moved to facilitate cleaning or maintenance.*

*(3) **MOBILE EQUIPMENT** means equipment, with or without wheels or rollers, that is typically used in a different location than where it is stored and moved from one location in the structure to another during ordinary use. Mobile equipment includes items that require floor space or electrical and/or mechanical connections but are portable, such as wheeled items, portable items, office-type furnishings, and diagnostic or monitoring equipment.*

…

***(Relocated from 1613A.2) IRREGULAR STRUCTURE. [DSA-SS, DSA-SS/CC]** A structure designed as having one or more plan or vertical irregularities per ASCE 7 Section 12.3.*

…

***NEXT GENERATION ATTENUATION WEST 2 (NGA WEST 2). [DSA-SS, DSA-SS/CC]** Attenuation relations used for the ~~2008~~ 2014 United States Geological Survey (USGS) seismic hazards maps (for the Western United States) or their equivalent as determined by the enforcement agency.*

…

***(Relocated from 1702A.1) PROJECT INSPECTOR. [DSA-SS, DSA-SS/CC]** The person approved to provide inspection in accordance with the California Administrative Code, Section 4-333(b). The term "project inspector" is synonymous with "inspector of record."*

…

***(Relocated from 1702A.1) QUALITY ASSURANCE (QA). [DSA-SS, DSA-SS/CC]** Special inspections and testing provided by an approved agency employed by the Owner. Project specific testing required by approved construction documents shall be performed by the approved agency responsible for Quality Assurance (QA), unless approved otherwise by the building official.*

***(Relocated from 1702A.1) QUALITY CONTROL (QC). [DSA-SS, DSA-SS/CC]** Inspections and materials/functionality testing provided by the fabricator, erector, manufacturer or other responsible contractor as applicable.*

…

[BS] SPECIAL INSPECTION. …

…

(Relocated from 1702A.1 and modified as shown) **Periodic special inspection.** ***[DSA-SS, DSA-SS/CC]*** *~~The part time or intermittent observation of work requiring s~~ Special inspection by ~~the a~~ special inspector who is intermittently present ~~in the area~~ where the work to be inspected has been or is being performed and at the completion of the work*.

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 3
USE AND OCCUPANCY CLASSIFICATION

Adopt Chapter 3 of the 2018 IBC without amendment.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	**X**	**X**	

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 4 – SPECIAL DETAILED REQUIREMENTS BASED ON USE AND OCCUPANCY

Adopt Chapter 4 of the 2018 IBC without amendment.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	X	X	

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 5 – GENERAL BUILDING HEIGHTS AND AREAS

Adopt Chapter 5 of the 2018 IBC without amendment.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	X	X	

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 6 – TYPES OF CONSTRUCTION

Adopt Chapter 6 of the 2018 IBC without amendment.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	X	X	

Notation for [DSA-SS]

Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 7 – FIRE AND SMOKE PROTECTION FEATURES

Adopt Chapter 7 of the 2018 IBC without amendment.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	**X**	**X**	

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 8 – INTERIOR FINISHES

Adopt Chapter 8 of the 2018 IBC without amendment.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	**X**	**X**	

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 9 – FIRE PROTECTION SYSTEMS

Adopt Chapter 9 of the 2018 IBC without amendment.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	X	X	

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 10 – MEANS OF EGRESS

Adopt Chapter 10 of the 2018 IBC without amendment.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	X	X	

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

…

CHAPTER 12 – INTERIOR ENVIRONMENT

Adopt Chapter 12 of the 2018 IBC without amendment.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	X	X	

Notation for [DSA-SS]

Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 14
EXTERIOR WALLS

Adopt Chapter 14 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall continue without change**.**

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter as amended (amended sections listed below)	**X**	**X**	
1404~~5~~.1.1	X	X	
~~1411~~ 1410	X	X	

SECTION 1401
GENERAL

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

…

SECTION 1404 (Formerly 1405)
INSTALLATION OF WALL COVERINGS

1404.1 (Formerly 1405.1) General. Exterior wall coverings shall be designed and constructed in accordance with the applicable provisions of this section.

1404~~5~~.1.1 Additional requirements. [DSA-SS & DSA-SS/CC] *In addition to the requirements of Sections 1404~~5~~.6, 1404~~5~~.7, 1404~~5~~.8, 1404~~5~~.9, and 1404~~5~~.10, the installation of anchored or adhered veneer shall comply with applicable provisions of Section 1410~~1~~.*

…

SECTION 1410~~1~~ [DSA-SS & DSA-SS/CC]
ADDITIONAL REQUIREMENTS FOR ANCHORED AND ADHERED VENEER.

1410~~1~~.1 General. *In no case shall veneer be considered as part of the backing in computing strength…*

1410~~1~~.2 Adhered Veneer. *Units of tile, masonry, stone or terra cotta which exceed 5/8 inch (16 mm) in thickness…*

1410~~1~~.2.1 Bond Strength and Tests. *Veneer shall develop a bond to the backing…*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 15
ROOF ASSEMBLIES AND ROOFTOP STRUCTURES

Adopt Chapter 15 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter as amended (amended sections listed below)	**X**	**X**	
1507.3.10	X	X	
1507.7.8	X	X	
~~*1510.7.1, Exception*~~ *1510.7.2.1*	X	X	
1513	X	X	

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 1502
ROOF DRAINAGE

Definitions relocated to Chapter 2 in 2018 IBC, and Section 1503.4 Roof drainage relocated into Section 1502 as standalone section. Carry forward California amendment referencing Chapter 11 of the California Plumbing Code.

…

SECTION 1510
ROOFTOP STRUCTURES

…

1510.7 Photovoltaic panels and modules. Rooftop-mounted photovoltaic panels and modules shall be designed in accordance with this section.

…

~~**1510.7.1 Wind resistance.** Rooftop-mounted photovoltaic panels and modules shall be designed for component and cladding wind loads in accordance with Chapter 16 using an effective wind area based upon the dimensions of a single unit frame.~~

~~*Exception: DSA-SS, DSA-SS/CC] The effective wind area shall be in accordance with Chapter 16 and ASCE 7 Section 26.2.*~~

…

1510.7.2 Photovoltaic panels and modules. Rooftop-mounted photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703 and shall be installed in accordance with the manufacturer's instructions.

1510.7.2.1 Installation. [DSA-SS, DSA-SS/CC, 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 this code, and shall comply with industry standards determined applicable by the enforcement agency. Seismic design requirements shall be determined from ASCE 7 Section 13.6.12. 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 the supports and attachments shall be submitted to the enforcement agency*

for review.

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 16
STRUCTURAL DESIGN

Adopt Chapter 16 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall be moved forward without change.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter as amended (amended sections listed below)	-	**X**	
1601.1.1		X	
1601.1.2		X	
1601.1.3		X	
1601.1.4		X	
1601.2		X	
~~*1616*~~*1617*		X	

SECTION 1601
GENERAL

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

1601.1.1 Application. [DSA-SS/CC] *The scope of application of Chapter 16 is as follows:*

1. Structures ~~Community college buildings~~ regulated by the Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC), which include those applications ~~as~~ listed in Section 1.9.2.2.

2. (Reserved for OSHPD)

1601.1.2 ~~Identification of a~~Amendments in this chapter. ~~[DSA-SS/CC]~~ *DSA-SS/CC and OSHPD adopt this chapter and all amendments.*

Exception: *~~Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC) a~~Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:*

1. Division of the State Architect - Structural Safety/Community Colleges:

[DSA-SS/CC] *- For ~~community college buildings~~ applications listed in Section 1.9.2.2*

2. (Reserved for OSHPD)

1601.1.3 Reference to other chapters. [DSA-SS/CC] *Where reference within this chapter is made to sections in Chapters 17 and 18, the provisions in Chapters 17A and 18A respectively shall apply instead.*

1601.1.4 Amendments. [DSA-SS/CC]

1. (Reserved for OSHPD)

2. [DSA-SS/CC] *See Section 161~~6~~7 for additional requirements.*

…

SECTION 161~~6~~7
ADDITIONAL REQUIREMENTS FOR COMMUNITY COLLEGES [DSA-SS/CC]

(All numbered subsections within this section are renumbered from 161~~6~~ to 1617)

…

161~~6~~7.3 Load combinations.

161~~6~~7.3.1 Stability. *When checking stability under the provisions of Section 1605.1.1 using allowable stress design, the 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 requirements for strength design requirements in ASCE 7 Section 12.13.5.

…

1616.5.1.2 *Reserved.* ~~***Item 5. Balconies and decks.*** *The minimum uniform live load for balconies and decks is 1.5 times the live load for the area served. Not required to exceed 100 psf.~~

…

1616~~7~~.6 Determination of snow loads [DSA-SS] *The ground snow load or the design snow load for roofs shall conform with the adopted ordinance of the city, county, or city and county in which the project site is located, and shall be approved by DSA. See Section 106.1.1 for snow load posting requirements.*

…

1616~~7~~.7 Wind loads.

1616~~7~~.7.1 Story drift for wind loads. *The calculated story drift due to wind pressures with ultimate design wind speed, V_{ult} , shall not exceed 0.008 times the story height for buildings less than 65 feet (19,812 mm) in height or 0.007 times the story height for buildings 65 feet (19,812 mm) or greater in height.*

Exception: *This story drift limit need not be applied for single-story open ~~buildings~~ structures in Risk Category I and II.*

…

1616~~7~~.9 Earthquake loads.

1616~~7~~.9.1 Seismic design category. *The seismic design category for a structure shall be determined in accordance with Section 1613.*

~~***1616.9.2 Definitions.*** *In addition to the definitions in Section 1613.2, the following words and terms shall, for the purposes of this section, have the meanings shown herein.~~

(Relocated to Chapter 2) ~~***ACTIVE EARTHQUAKE FAULT.*** *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.*~~

(Relocated to Chapter 2) ~~***DISTANCE FROM AN ACTIVE EARTHQUAKE FAULT.*** *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.*~~

(Relocated to Chapter 2) ~~***IRREGULAR STRUCTURE.*** *A structure designed as having one or more plan or vertical irregularities per ASCE 7 Section 12.3.*~~

~~***1616.9.3***~~***1617.9.2 Mapped acceleration parameters.*** *Seismic Design Category shall be determined in accordance with Section 1613.~~3~~.2.5.*

~~***1616.9.4***~~***1617.9.3 Determination of seismic design category.***

Structures not assigned to Seismic Design Category E or F, in accordance with Section 1613.~~3~~.2 shall be assigned to Seismic Design Category D.

~~***1616.9.4.1***~~***1617.9.3.1 Alternative seismic design category determination.*** *The alternative Seismic Design Category determination procedure of Section 1613.~~3~~.2.5.1 is not permitted by DSA-SS/CC.*

~~***1616.9.4.2***~~***1617.9.3.2 Simplified design procedure.*** *The simplified design procedure of Section 1613.~~3~~.2.5.2 is not permitted by DSA-SS/CC.*

1617.9.4 Ballasted photovoltaic panel systems. *Ballasted, roof-mounted photovoltaic panel systems shall comply with ASCE 7 13.6.12.*

1617.10 Tsunami Loads. *The design and construction of Risk Category III or IV buildings and structures located in the ASCE Tsunami Design Zones defined in the ASCE Tsunami Design Geodatabase, or other data determined applicable by the enforcement agency, shall be in accordance with Section 1615.1 except as modified by this code. Tsunami Risk Category for community college buildings and structures shall be identified and submitted for acceptance by DSA. Determination of Tsunami Risk Category shall be proposed by the design professional in general responsible charge in coordination with the owner and local community based upon the relative importance of that facility to provide vital services, provide important functions, and protect special populations. The determination of relative importance shall include consideration of a tsunami warning and evacuation plan and procedure when adopted by the local community.*

~~***1616.10***~~***1617.11 Modifications to ASCE 7.*** *The text of ASCE 7 shall be modified as indicated in Sections* ~~***1616.10.1***~~***1617.11.1*** *through* ~~***1616.10.24***~~***1617.11.24***

(All numbered subsections within this section are renumbered from 161~~6.10~~.x to 161<u>7.11</u>.x)

~~1616.10.1~~<u>1617.11.1</u> ASCE 7, Section 1.3. *Modify ASCE 7 Section 1.3 by adding Section <u>1.3.8</u> ~~1.3.6~~ as follows:*

<u>1.3.8</u> ~~1.3.6~~ Structural Design Criteria. *Where design is based on ASCE 7 Chapters 16, 17, or 18,~~-~~the ground motion, analysis and design methods, material assumptions, testing requirements, and acceptance criteria proposed by the engineer shall be submitted to the enforcement agency in the form of structural design criteria for approval.* ***[DSA-SS]*** *Structural design criteria including wind tunnel design recommendations are required where design is based on ASCE 7 Chapter 31.*

Peer review requirements in Section 322 of the California Existing Building Code shall apply to design reviews required by ASCE 7 Chapters 17 and 18.

~~1616.10.2~~<u>1617.11.2</u> *<u>Reserved.</u> ~~ASCE 7, Section 11.4.7. Modify ASCE 7 Section 11.4.7 by adding the following:~~*

~~For buildings assigned to Seismic Design Category E or F, or when required by the building official, a ground motion hazard analysis shall be performed in accordance with ASCE 7 Chapter 21 as modified by Section 1803A.6 of this code.~~

~~1616.10.3~~<u>1617.11.3</u> ASCE 7, Table 12.2 -1. *Modify ASCE 7 Table 12.2-1 as follows:*

A. BEARING WALL SYSTEMS

17. Light-framed walls with shear panels of all other materials – Not permitted by DSA-SS.

C. MOMENT RESISTING FRAME SYSTEMS

12. Cold-formed steel –special bolted moment frame - Not permitted by DSA-SS.

Exceptions:

1) Systems listed in this section can be used as an alternative system when pre-approved 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~~1613A.4.1~~

…

~~1616.10.5~~1617.11.5 ASCE 7, Section 12.2.3.2. *Modify ASCE 7 Section 12.2.3.2 by adding the following additional requirement:*

f. 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.

…

~~1616.10.9~~1617.11.9 ASCE 7, Section 12.3.3.1. *Modify first sentence of ASCE 7 Section 12.3.3.1 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 vertical structural irregularities Type 1b, 5a or 5b of Table 12.3-2 shall not be permitted.*

Exception: *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 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% of the allowable story drift in ASCE 7 Table 12.12-1.*

…

~~1616.10.11~~1617.11.11 *Reserved.* ***~~ASCE 7, Section 12.8.1.3.~~*** *~~Replace ASCE 7 Section 12.8.1.3 by the following:~~*

~~12.8.1.3 Maximum S_{DS} Value in Determination of C_s and E_v~~

~~The value of C_s and E_v are permitted to be calculated using a value of S_{DS} equal to 1.0, but not less than 70% of S_{DS} as defined in Section 11.4.4, provided that all of the following criteria are met:~~

1. *~~The structure does not have irregularities, as defined in Section 12.3.2;~~*
2. *~~The structure does not exceed five stories above the base as defined in Section 11.2;~~*
3. *~~The structure has a fundamental period, T, that does not exceed 0.5 seconds, as determined using Section 12.8.2;~~*

~~*4. The structure meets the requirements necessary for the redundancy factor, ρ, to be permitted to be taken as 1.0, in accordance with Section 12.3.4.2;*~~

~~*5. The site soil properties are not classified as Site Class E or F, as defined in Section 11.4.2; and*~~

~~*6. The structure is classified as Risk Category I or II, as defined in Section 1.5.1.*~~

~~***1616.10.12***~~***1617.11.12*** *Reserved.* ~~***ASCE 7, Section 12.9.4.*** *Replace ASCE 7 Section 12.9.4 as follows:*~~

~~***12.9.4 Scaling Design Values of Combined Response.*** *Modal base shears used to determine forces and drifts shall not be less than the base shears calculated using the equivalent lateral force procedure of section 12.8.*~~

~~***1616.10.13***~~***1617.11.13*** *Reserved.* ~~***ASCE 7, Section 12.10.2.1****. Replace ASCE 7 Exception 1 of Section 12.10.2.1 by the following:*~~

~~***EXCEPTIONS:***~~

~~*1. The forces calculated above need not exceed those calculated using the load combinations with overstrength factor of Section 12.4.3.2 with seismic forces determined by Equation 12.10- 3 and transfer forces, where applicable.*~~

~~***1616.10.14***~~***1617.11.14*** ***ASCE 7, Section 12.13.1.*** *Modify ASCE 7 section 12.13.1 by adding Section 12.13.1.1 as follows:*

12.13.1.1 Foundations and superstructure-to-foundation connections. *The foundation shall be capable of transmitting the design base shear and the overturning forces from the structure into the supporting soil. Stability against overturning and sliding shall be in accordance with Section 1605A.1.1.*

In addition, the foundation and the connection of the superstructure elements to the foundation shall have the strength to resist, in addition to gravity loads, the lesser of the following seismic loads:

…

3. Forces from the Load Combinations with overstrength factor in accordance with ASCE 7 Section 12.4.3~~.2~~.1.

…

~~***1616.10.15***~~***1617.11.15*** ***ASCE 7, Section 13.1.4.*** *Replace ASCE 7 Section 13.1.4 with the following:*

13.1.4 Exemptions. *The following nonstructural components are exempt from the requirements of this section:*

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

2. Temporary or moveable or ~~(~~mobile~~)~~ equipment.

Exceptions:

a) Equipment shall be anchored if it is permanently attached to the building utility services such as electricity, gas, or water. For the purposes of this requirement, "permanently attached" shall include all electrical connections except plugs for ~~duplex receptacles~~ 110/220 volt receptacles having a flexible cable.

b) ~~The enforcement agency shall be permitted to require temporary attachments for m~~Movable or mobile equipment which is ~~usually stationed in one place and~~ heavier than 400 pounds or has a center of mass located 4 feet (1.22 m) or more above the adjacent floor or roof level that directly support the component ~~when they are not in use for a period longer than 8 hours at a time.~~ shall be restrained in a manner approved by the enforcement agency, Mobile equipment shall be restrained when not in use and is stored, unless the equipment is stored in a storage room that does not house hazardous materials or any facility systems or fixed equipment that can be affected by mobile equipment lacking restraint.

3. Discrete ~~A~~ architectural, mechanical and electrical components and fixed equipment in Seismic Design Categories D, E, or F that are positively attached to the structure and anchorage is detailed on the plans, provided that either: ~~where all of the following apply:~~

~~a. The component is positively attached to the structure;~~

~~b. Flexible connections are provided at seismic separation joints and between the component and associated ductwork, piping, and conduit; and either:~~

The component weighs 400 pounds (1780 N) or less, ~~and has a~~ the center of mass is located 4 feet (1.22 m) 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.

Exception: *Special Seismic Certification requirements of this code in accordance with Section 1705A.13.3 shall be applicable.*

or

~~c~~b. The component weighs 20 pounds (89 N) or less or, in the case of a distributed system, 5 lb/ft (73 N/m) or less.

Exception: *The enforcement agency shall be permitted to require attachments for equipment with hazardous contents to be shown on construction documents irrespective of weight.*

~~1616.10.16~~1617.11.16 ASCE 7, Section 13.5.6.2. *Modify ~~Replace~~ ASCE 7, Section 13.5.6.2 with 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:*

~~13.5.6 Suspended Ceilings.~~ *~~Suspended ceilings shall be in accordance with this section.~~*

~~13.5.6.1 Seismic Forces.~~ *~~The weight of the ceiling, W_p, shall include the ceiling grid; ceiling tiles or panels; light fixtures if attached to, clipped to, or laterally supported by the ceiling grid; and other components that are laterally supported by the ceiling. W_p shall be taken as not less than 4 psf (19 N/m^2).~~*

~~The seismic force, F_p, shall be transmitted through the ceiling attachments to the building structural elements or the ceiling-structure boundary.~~

~~13.5.6.2 Seismic Design Requirements.~~ *~~Suspended acoustical tile or lay-in panel ceilings shall be designed in accordance with ASTM E 580 Section 5.2.8 and the requirements of Sections 13.5.6.2.1 and 13.5.6.2.2, or be designed in accordance with Section 13.2.1.1, or be seismically qualified in accordance with Sections 13.2.5 or 13.2.6.~~*

~~13.5.6.2.1. Industry Standard Construction for Acoustical Tile or Lay-In Panel Ceilings. Acoustical tile or lay-in panel ceilings in Seismic Design Categories D, E, and F shall be designed and installed in accordance with ASTM C635, ASTM C636, and ASTM E 580, Section 5 - Seismic Design Categories D, E, and F as modified by Section 13.5.6.2.2.~~

Exception to Section 13.5.8.1 shall not be used in accordance with ASTM E 580 Section 5.5.

13.5.6.2.3 *~~13.5.6.2.2~~* ***Modification to ASTM E 580.*** *Modify ASTM E 580 by the following:*

1. ***Exitways****. Lay-in ceiling assemblies in exitways ~~of hospitals~~ 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 E 580 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" from all pipes, ducts, conduits and equipment that are not braced for horizontal forces, unless approved otherwise by the building official.*

~~1616.10.17~~1617.11.17 ASCE 7, Section 13.6.5. *~~Modify~~ Replace ASCE 7, Section 13.6.5~~.6 Exceptions 1 and 2~~ as follows:*

~~Exceptions:~~

~~1. Design for the seismic forces of Section 13.3 shall not be required for raceways where either:~~

~~a. Trapeze assemblies are used to support raceways and the total weight of the raceway supported by trapeze assemblies is less than 10 lb/ft (146 N/m), or~~

~~b. The raceway is supported by hangers and each hanger in the raceway run is 12 in. (305 mm) or less in length from the raceway support point to the supporting structure. Where rod hangers are used with a diameter greater than 3/8 inch, they shall be equipped with swivels to prevent inelastic bending in the rod.~~

~~2. Design for the seismic forces of Section 13.3 shall not be required for conduit,~~

~~*regardless of the value of Ip, where the conduit is less than 2.5 in. (64 mm) trade size.*~~

13.6.5 Distribution Systems: Conduit, Cable Tray, and Raceways. *Cable trays and raceways shall be designed for seismic forces and seismic relative displacements as required in Section 13.3. Conduit equal to or greater than 2.5 in. (64 mm) trade size and attached to panels, cabinets, or other equipment subject to seismic relative displacement, D_{pl}, shall be provided with flexible connections or designed for seismic forces and seismic relative displacements as required in Section 13.3.*

EXCEPTIONS:

1. Design for the seismic forces and relative displacements of Section 13.3 shall not be required for raceways where flexible connections or other assemblies are provided between the cable tray or raceway and associated components to accommodate the relative displacement, where the cable tray or raceway is positively attached to the structure, and where one of the following apply:

a. Trapeze assemblies with 3/8 in. (10 mm) or 1/2 in. (13-mm) diameter rod hangers not exceeding 12 in. (305 mm) in length from the conduit, cable tray, or raceway support point to the connection at the supporting structure are used to support the cable tray or raceway, and the total weight supported by any single trapeze is 100 lb (445 N) or less, or

b. The conduit, cable tray, or raceway is supported by individual rod hangers 3/8 in. (10 mm) or 1/2 in. (13 mm) in diameter, and each hanger in the raceway run is 12 in. (305 mm) or less in length from the conduit, cable tray, or raceway support point connection to the supporting structure, and the total weight supported by any single rod is 50 lb (220 N) or less.

2. Design for the seismic forces and relative displacements of Section 13.3 shall not be required for conduit, regardless of the value of I_p, where the conduit is less than 2.5 in. (64 mm) trade size.

Design for the displacements across seismic joints shall be required for conduit, cable trays, and raceways with I_p = 1.5 without consideration of conduit size.

~~1616.10.18~~1617.11.18 ASCE 7, Section 13.6.6~~7~~. *Replace ASCE 7, Section 13.6.6~~7~~ ~~Exceptions 1 and 2~~ with the following:*

~~Exceptions:~~

~~*The following exceptions pertain to ductwork not designed to carry toxic, highly toxic, or flammable gases or used for smoke control:*~~

~~*1. Design for the seismic forces of Section 13.3 shall not be required for ductwork where either:*~~

~~*a. Trapeze assemblies are used to support ductwork and the total weight of the ductwork supported by trapeze assemblies is less than 10 lb/ft (146 N/m); or*~~

~~*b. The ductwork is supported by hangers and each hanger in the duct run is 12 in. (305 mm) or less in length from the duct support point to the supporting structure. Where rod hangers are used with a diameter greater than 3/8 inch, they shall be equipped with swivels to prevent inelastic bending in the rod.*~~

~~*2. Design for the seismic forces of Section 13.3 shall not be required where provisions are made to avoid impact with larger ducts or mechanical components or to protect the ducts in the event of such impact; and HVAC ducts have a cross-sectional area of 6 ft^2 (0.557 m^2) or less, or weigh 10 lb/ft (146 N/m) or less.*~~

***13.6.6 Distribution Systems: Duct Systems**. HVACR and other duct systems shall be designed for seismic forces and seismic relative displacements as required in Section 13.3.*

***EXCEPTIONS:** The following exceptions pertain to ductwork not designed to carry toxic, highly toxic, or flammable gases or not used for smoke control:*

1. Design for the seismic forces and relative displacements of Section 13.3 shall not be required for duct systems where flexible connections or other assemblies are provided to accommodate the relative displacement between the duct system and associated components, the duct system is positively attached to the structure, and where one of the following apply:

a. Trapeze assemblies with 3/8 in. (10 mm) or 1/2 in. (13-mm) diameter rod hangers not exceeding 12 in. (305 mm) in length from the duct support point to the connection at the supporting structure are used to support duct, and the total weight supported by any single trapeze is less than 10 lb/ft (146 N/m) and 100 lb or less; or

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

2. Design for the seismic forces and relative displacements of Section 13.3 shall not be required where provisions are made to avoid impact with other ducts or mechanical components or to protect the ducts in the event of such impact, the distribution system is positively attached to the structure; and HVACR ducts have a cross-sectional area of less than 6 ft^2 (0.557 m^2) and weigh 20 lb/ft (292 N/m) or less.

Components that are installed in line with the duct system and have an operating

weight greater than 75 lb (334 N), such as fans, terminal units, heat exchangers, and humidifiers, shall be supported and laterally braced independent of the duct system, and such braces shall meet the force requirements of Section 13.3.1. Components that are installed in line with the duct system, have an operating weight of 75 lb (334 N) or less, such as small terminal units, dampers, louvers, and diffusers, and are otherwise not independently braced shall be positively attached with mechanical fasteners to the rigid duct on both sides. Piping and conduit attached to in-line equipment shall be provided with adequate flexibility to accommodate the seismic relative displacements of Section 13.3.2.

~~1616.10.19~~1617.11.19 ASCE 7, Section ~~13.6.8.3~~ 13.6.7.3. *Replace ASCE 7, Section ~~13.6.8.3~~ 13.6.7.3 with the following:*

~~13.6.8.3 Exceptions.~~ *~~Design of piping systems and attachments for the seismic forces of Section 13.3 shall not be required where one of the following conditions apply:~~*

~~1. Trapeze assemblies are used to support piping whereby no single pipe exceeds the limits set forth in 3a. or b. below and the total weight of the piping supported by the trapeze assemblies is less than 10 lb/ft (146 N/m).~~

~~2. The piping is supported by hangers and each hanger in the piping run is 12 in. (305 mm) or less in length from the top of the pipe to the supporting structure. Where pipes are supported on a trapeze, the trapeze shall be supported by hangers having a length of 12 in. (305 mm) or less. Where rod hangers are used with a diameter greater than 3/8 inch, they shall be equipped with swivels to prevent inelastic bending in the rod.~~

~~3. Piping having an R_p in Table 13.6-1 of 4.5 or greater is used and provisions are made to avoid impact with other structural or nonstructural components or to protect the piping in the event of such impact and where the following size requirements are satisfied:~~

~~a. For Seismic Design Categories D, E, or F and values of I_p greater than one, the nominal pipe size shall be 1 inch (25 mm) or less.~~

~~b. For Seismic Design Categories D, E, or F, where I_p = 1.0 the nominal pipe size shall be 3 inches (80 mm) or less.~~

~~The exceptions above shall not apply to elevator piping.~~

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 in. (10-mm) or 1/2 in. (13-mm) diameter rod hangers not exceeding 12 in. (305 mm) in length from the pipe support point to the connection at the supporting structure, do not support piping with I_p greater than 1.0, and no single pipe exceeds the diameter limits set forth in item 2b below or 2 in. (50 mm) for Seismic Design Categories D, E, or F where I_p is greater than 1.0 and the total weight supported by any single trapeze is 100 lb (445 N) or less, or

2. Piping that has an R_p in Table 13.6-1 of 4.5 or greater is either 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 I_p = 1.0 are supported by individual rod hangers 3/8 in. (10 mm) or 1/2 in. (13 mm) in diameter, where each hanger in the pipe run is 12 in. (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 lb (220 N) or less. In addition, the following limitations on the size of piping shall be observed:

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

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

3. Pneumatic tube systems supported with trapeze assemblies using 3/8-in. (10-mm) diameter rod hangers not exceeding 12 in. (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 lb (445 N) or less.

4. Pneumatic tube systems supported by individual rod hangers 3/8 in. (10 mm) or 1/2 in (13 mm) in diameter, and each hanger in the run is 12 in. (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 lb (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.

~~16~~16.10.20~~10~~16~~17~~17.11.20 ASCE 7, Section 13.6.~~10~~10~~11~~11.1. *Modify ASCE 7 Section 13.6.~~10~~10~~11~~11.1 by adding Section 13.6.~~10~~10~~11~~11.1.1 as follows:*

13.6.~~10~~10~~11~~11.1.1 Elevators guide rail support. *The design of guide rail support-*

bracket fastenings and the supporting structural framing shall use the weight of the counterweight or maximum weight of the car plus not less than 40 percent of its rated load. The seismic forces shall be assumed to be distributed one third to the top guiding members and two thirds to the bottom guiding members of cars and counterweights, unless other substantiating data are provided. In addition to the requirements of ASCE 7 Section 13.6.~~10~~11.1, the minimum seismic forces shall be 0.5g acting in any horizontal direction.

~~1616.10.21~~1617.11.21 ASCE 7, Section 13.6.~~10~~11.4. *Replace ASCE 7, Section 13.6.~~10~~11.4 as follows:*

13.6.10.4 Retainer plates. *Retainer plates are required at the top and bottom of the car and counterweight, except where safety devices acceptable to the enforcement agency are provided which meet all requirements of the retainer plates, including full engagement of the machined portion of the rail. The design of the car, cab stabilizers, counterweight guide rails and counterweight frames for seismic forces shall be based on the following requirements:*

1. *The seismic force shall be computed per the requirements of ASCE 7 Section 13.6.~~10~~11.1. The minimum horizontal acceleration shall be 0.5g for all buildings.*

~~1616.10.22~~1617.11.22 *Reserved.* ***~~ASCE 7, Section 16.1.4.~~*** *~~Remove ASCE 7 Sections 16.1.4.1 and 16.1.4.2 and modify Section 16.1.4 by the following:~~*

~~Maximum scaled base shears used to determine forces and drifts shall not be less than the base shears calculated using the equivalent lateral force procedure of Section 12.8.~~

~~1616.10.23~~1617.11.23 *Reserved.* ***~~ASCE 7, Section 16.2.4.~~*** *~~Modify ASCE 7 Section 16.2.4 by the following:~~*

~~a) Where site is located within 3.1 miles (5 km) of an active fault at least seven ground motions shall be analyzed and response parameters shall be based on larger of the average of the maximum response with ground motions applied as follows:~~

1. *~~Each of the ground motions shall have their maximum component at the fundamental period aligned in one direction.~~*
2. *~~Each of the ground motion's maximum component shall be rotated orthogonal to the previous analysis direction.~~*

~~c) Where site is located more than 5 km from an active fault at least 10 ground motions shall be analyzed. The ground motions shall be applied such that one-half shall have their maximum component aligned in one direction and the other half aligned in the orthogonal~~

~~*direction. The average of the maximum response of all the analyses shall be used for design.*~~

~~1616.10.24~~1617.11.24 ASCE 7 Section 17.2.4.7. *Modify ASCE 7 Section 17.2.4.7 by adding…*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 16*A*
STRUCTURAL DESIGN

Adopt Chapter 16 of the 2018 IBC as Chapter 16A of the 2019 CBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter as amended	**X**	**-**	

SECTION 1601*A*
GENERAL

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

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

1. *<u>Structures</u> ~~Applications listed in Section 1.9.2.1,~~ regulated by the Division of the State Architect-Structural Safety (DSA-SS), <u>which include those applications listed in Section 1.9.2.1</u>. These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.*
2. *(Reserved for OSHPD).*

Exception: (Reserved for OSHPD)

1601A.1.2 Amendments in this chapter. *DSA-SS 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. *Division of the State Architect-Structural Safety:*

   [DSA-SS] *– For applications listed in Section 1.9.2.1.*

2. *(Reserved for OSHPD).*

…

SECTION 1603*A*
CONSTRUCTION DOCUMENTS

1603*A*.1 General. Construction documents shall show the size, section and relative locations of structural members with floor levels, column centers and offsets dimensioned. The design loads and other information pertinent to the structural design required by Sections 1603*A*.1.1 through ~~1603.1.9~~ *1603A.1.9*~~*10*~~ shall be indicated on the construction documents.

…

[DSA-SS] *Additional requirements are included in Section 4- 210 and 4-317 of the California Administrative Code (Part 1, Title 24, C.C.R).*

[Reserved for OSHPD]

…

1603*A*.1.5 Earthquake design data. The following information related to seismic loads shall be shown, regardless of whether seismic loads govern the design of the lateral-force-resisting system of the structure:

1. Risk Category
2. Seismic importance factor, I_e.
3. Mapped spectral response accelerations, S_S and S_1.
4. Site class.
5. Design spectral response acceleration parameters, S_{DS} and S_{D1}.
6. Seismic design category.
7. Basic seismic-force-resisting system(s).
8. Design base shear.
9. Seismic response coefficient(s), C_S.
10. Response modification factor(s), R.

11. Analysis procedure used.
12. *Applicable horizontal structural irregularities.*
13. *Applicable vertical structural irregularities.*
14. *Location of base as defined in ~~Section 1613A.2.~~ ASCE 7 Section 11.2*

…

1603A.1.~~9~~10 Construction Procedures. *Where unusual erection or construction procedures are considered essential by the Registered Design Professional (RDP) in order to accomplish the intent of the design or influence the construction, such procedure shall be indicated on the construction documents.*

1603A.2 Site Data Reports. *Geotechnical and Geohazard reports for review by the enforcement agency shall be accompanied by a description of the project prepared by the Registered Design Professional (RDP) in responsible charge, which shall include the following:*

1. *Type of service such as General Acute Care Facility, ~~Skilled Nursing Facility, Intermediate Care Facility, Acute Psychiatric Facility,~~ Central Utility Plants, etc.*
2. *Construction materials used for the project such as Steel, Concrete. Masonry, Wood, etc.*
3. *Type of construction project such as new, addition, alteration, repair, etc.*
4. *For existing buildings, extent of construction such as incidental, minor, major, and/or voluntary seismic improvements as defined in **[DSA-SS]** Section 318, Part 10, Title 24, C.C.R.*
5. *Seismic Force Resisting System used for each structure in the project.*
6. *Foundation system that will be used for each structure in the project such as spread footing, drilled piers, etc.*
7. *Analysis procedure used and basis of design such as ASCE 7 Equivalent Lateral Force Procedure, ASCE 41 Nonlinear Dynamic Procedure, etc.*
8. *Building characteristics such as number of stories above and below grade, foot print area at grade, grade slope on site, etc.*
9. *Special features such as requirement for shoring, underpinning, retaining walls, etc.*

…

SECTION 1604*A*
GENERAL DESIGN REQUIREMENTS

…

1604*A*.3 Serviceability. Structural systems and members thereof shall be designed to have adequate stiffness to limit deflections as indicated in Table 1604*A*.3. Drift limits applicable to earthquake loading shall be in accordance with ASCE 7 Chapter 12, 13, 15 or 16, as applicable.

1604*A*.3.1 Deflections. The deflections of structural members shall not exceed the more restrictive of the limitations of Sections 1604*A*.3.2 through ~~16043.5~~ *1604A.3.6* or that permitted by Table 1604*A*.3.

…

TABLE 1604*A*.3 - DEFLECTION LIMITS[a, b, c, h, i]

CONSTRUCTION	***L*, or L_r ~~or L_r~~**	***S*, *E* or *W*[f]**	***D* + (*L* or L_r)[d,g]**
…	**…**	**…**	**…**
… *Veneered walls, anchored veneers and adhered veneers over 1 inch (25 mm) thick, including the mortar backing*	**…** —	**…** *l*/600	…_
Farm buildings	—	—	*l*/180
Greenhouses	—	—	*l*/120

For SI: 1 foot = 304.8 mm.

a. For structural roofing and siding made of formed metal sheets, the total load deflection shall not exceed *l*/60. For secondary roof structural members supporting formed metal roofing, the live load deflection shall not exceed *l*/150. For secondary wall members supporting formed metal siding, the design wind load deflection shall not exceed l/90. For roofs, this exception only applies when the metal sheets have no roof covering.
b. Flexible, folding and portable partitions are not governed by the provisions of this section. The deflection criterion for interior partitions is based on the horizontal load defined in Section 1607*A*.15.

…

f. The wind load shall be permitted to be taken as 0.42 times the "component and cladding" loads or directly calculated using the 10-year mean return interval wind speed for the purpose of determining deflection limits in Table 1604*A*.3. Where

framing members support glass, the deflection limit therein shall not exceed that specified in Section 1604*A*.3.7.

g. For steel structural members, the ~~detection~~ *deflection* due to creep component of long-term dead load shall be permitted to be taken as zero.

…

1604A.3.7~~8~~8 Horizontal diaphragms. *The maximum span- depth ratio for any roof or floor diaphragm consisting of steel and composite steel slab decking shall not exceed those given in Table 1604A.4, unless test data and design calculations acceptable to the enforcement agency are submitted and approved for the use of other span-depth ratios. Concrete diaphragms shall not exceed the span- depth ratios for the equivalent composite steel-slab diaphragm in Table 1604A.4.*

…

1604A.3.8~~9~~9 Deflections*. Deflection criteria for materials not specified shall be developed by the project architect or structural engineer in a manner consistent with the provisions of this section and approved by the enforcement agency.*

…

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.

Exception: 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.

…

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

RISK CATEGORY	**NATURE OF OCCUPANCY**
…	**…**
IV	Buildings and other structures designated as essential facilities, including but not limited to: • ~~Group I-2, Condition 2 occupancies having emergency surgery or emergency treatment facilities.~~

	… • Designated emergency preparedness, communications and operations centers and other facilities required for emergency response ***[DSA-SS]*** *as defined in the California Administrative Code (Title 24, Part 1, CCR) Section 4-207 and all structures required for their continuous operation or access/egress.* **…**

…

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 components with another portion having a higher risk category, 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 all of the following:

…

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 1605*A*.2 or 1605*A*.3 shall be permitted. Where the load combinations specified in Section 1605*A*.2 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 1807A.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 requirements for strength design requirements in ASCE 7 Section 12.13.5.

…

1605A.3 Load combinations using allowable stress design.

Load combinations for allowable stress design shall be in accordance with Section 1605*A*.3.1 or 1605*A*.3.2.

…

SECTION 1607*A*
LIVE LOADS

…

1607*A*.1 General. Live loads are those loads defined in Chapter 2 of this code.

…

TABLE 1607*A*.1 - MINIMUM UNIFORMLY DISTRIBUTED LIVE LOADS AND MINIMUM CONCENTRATED LIVE LOADS[g]

OCCUPANCY OR USE	UNIFORM (psf)	CONCENTRATED (lbs.)
…	…	…
~~5. Balconies and decks~~	~~[DSA-SS] 1.5 times the live load for the area served. Not required to exceed 100 psf.~~	…
…	…	…

24. Recreational Uses:		
Bowling alleys, poolrooms and similar uses	75[m]	—
Dance halls and ballrooms	100[n]	—
Gymnasiums	100[m]	—
Ice skating rink	250[m]	—
Reviewing stands, grandstands and bleachers[qs]	100[c,m]	—
Roller skating rink	100[m]	—
Stadiums and arenas with fixed seats *(fastened to floor)*	60[c,m]	—
...	...	...
27. Schools[np]		
Classrooms	75[pr]	1,000
Corridors above first floor	80	1,000
First-floor corridors	100	1,000
...	...	...

35. Yards and terraces, pedestrians[rt]	*100[m]*	—
36. Storage racks and wall-hung cabinets.	*Total Loads[np]*	

...

~~n.~~p. 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/m^3) per total volume of the rack or cabinet, whichever is less.

Other media:

20 pounds per cubic foot (311 N/m^3) or 20 pounds per square foot (958 Pa), whichever is less, but not less than actual loads.

~~o.~~q. ***[DSA-SS]*** *The following minimum loads for stage accessories apply:*

1. *Gridirons and fly galleries: 75 pounds per square foot uniform live load.*
2. *Loft block wells: 250 pounds per lineal foot vertical load and lateral load.*
3. *Head block wells and sheave beams: 250 pounds per lineal foot vertical load and lateral load. Head block wells and sheave beams shall be designed for all tributary loft block well loads. Sheave blocks shall be designed with a safety factor of five.*
4. *Scenery beams where there is no gridiron: 300 pounds per lineal foot vertical load and lateral load.*
5. *Ceiling framing over stages shall be designed for a uniform live load of 20 pounds per square foot. For members supporting a tributary area of 200 square feet or more, this additional load may be reduced to 15 pounds per square foot.*

~~p.~~r. ***[DSA-SS]*** *The minimum uniform live load for classroom occupancies is 50 psf. Live*

load reduction is not permitted for classrooms classified as Group A occupancies unless specific exception of Section 1607A.10 apply.

~~q.~~s. ***[DSA-SS]*** *The minimum uniform live load for a press box floor or accessible roof with railing is 100 psf.*

~~r.~~t. ***[DSA-SS]*** *Item 35 applies to pedestrian bridges and walkways that are not subjected to uncontrolled vehicle access.*

…

~~1607A.12.6~~ 1607A13.6 ***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*.14~~1607A.15 Interior walls and partitions. Interior walls and partitions that exceed 6 feet (1829 mm) in height, including their finish materials, shall have adequate strength and stiffness to resist the loads to which they are subjected but not less than a horizontal load of 5 psf (0.240 kN/m^2). *The 5 psf (0.24 kN/m^2) service load need not be applied simultaneously with wind or seismic loads. The deflection of such walls under a load of 5 psf (0.24 kN/m^2) shall not exceed the limits in Table 1604A.3.*

…

SECTION 1608*A*
SNOW LOADS

1608*A*.2 Ground snow loads. The ground snow loads to be used in determining the design snow loads for roofs shall be determined in accordance with ASCE 7 or Figure 1608*A*.2 for the contiguous United States ~~and Table 1608.2 for Alaska~~. Site-specific case studies shall be made in areas designated "CS" in Figure 1608*A*.2. Ground snow loads for sites at elevations above the limits indicated in Figure 1608*A*.2 and for all sites within the CS areas shall be approved. Ground snow load determination for such sites shall be based on an extreme value statistical analysis of data available in the vicinity of the site using a value with a 2-percent annual probability of being exceeded (50-year mean recurrence interval). ~~Snow loads are zero for Hawaii, except in mountainous regions as approved by the building official.~~

~~TABLE 1608.2 - GROUND SNOW LOADS, pg , FOR ALASKAN LOCATIONS~~

~~LOCATION~~	~~POUNDS PER SQUARE~~	~~LOCATION~~	~~POUNDS PER SQUARE~~	~~LOCATION~~	~~POUNDS PER SQUARE FOOT~~

	~~FOOT~~		~~FOOT~~		
~~Adak~~	~~30~~	~~Galena~~	~~60~~	~~Petersburg~~	~~150~~
~~Anchorage~~	~~50~~	~~Gulkana~~	~~70~~	~~St. Paul Islands~~	~~40~~
~~Angoon~~	~~70~~	~~Homer~~	~~40~~	~~Seward~~	~~50~~
~~Barrow~~	~~25~~	~~Juneau~~	~~60~~	~~Shemya~~	~~25~~
~~Barter Island~~	~~35~~	~~Kenai~~	~~70~~	~~Sitka~~	~~50~~
~~Bethel~~	~~40~~	~~Kodiak~~	~~30~~	~~Talkeetna~~	~~120~~
~~Big Delta~~	~~50~~	~~Kotzebue~~	~~60~~	~~Unalakleet~~	~~50~~
~~Cold Bay~~	~~25~~	~~McGrath~~	~~70~~	~~Valdez~~	~~160~~
~~Cordova~~	~~100~~	~~Nenana~~	~~80~~	~~Whittier~~	~~300~~
~~Fairbanks~~	~~60~~	~~Nome~~	~~70~~	~~Wrangell~~	~~60~~
~~Fort Yukon~~	~~60~~	~~Palmer~~	~~50~~	~~Yakutat~~	~~150~~

~~For SI: 1 pound per square foot = 0.0479 kN/m2.~~

(**FIGURE 1608*A*.2 - Not shown for Clarity)**

…

1608A.4 Determination of snow loads [DSA-SS] *The ground snow load or the design snow load for roofs shall conform with the adopted ordinance of the city, county, or city and county in which the project site is located, and shall be approved by DSA. See Section 106.1.1 for snow load posting requirements.*

…

SECTION 1609A
WIND LOADS

…

1609A.1.3 Story Drift for Wind Loads*. The calculated story drift due to wind*

pressures with ultimate design wind speed, V_{ult}, shall not exceed 0.008 times the story height for buildings less than 65 feet (19,812 mm) in height or 0.007 times the story height for buildings 65 feet (19,812 mm) or greater in height.

Exception: [DSA-SS] *This story drift limit need not be applied for single-story open ~~buildings~~ structures in Risk Category I and II.*

…

SECTION 1612*A*
FLOOD LOADS

…

1612*A*.3 Establishment of flood hazard areas. To establish flood hazard areas, the applicable governing authority shall adopt a flood hazard map and supporting data. The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management ~~Agency in an engineering report entitled "The Flood Insurance Study for [INSERT NAME OF JURISDICTION]," dated [INSERT DATE OF ISSUANCE],~~ *Agency's Flood Insurance Study (FIS) adopted by the local authority having jurisdiction where the project is located*, as amended or revised with the accompanying Flood Insurance Rate Map (FIRM) and Flood Boundary and Floodway Map (FBFM) and related supporting data along with any revisions thereto. The adopted flood hazard map and supporting data are hereby adopted by reference and declared to be part of this section.

…

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 ~~is permitted to~~ *shall* be determined in accordance with Section 1613*A* ~~or ASCE 7~~.

Exception<u>s</u>:

~~*1.* Detached one- and two-family dwellings, assigned to Seismic Design Category A, B or C, or located where the mapped short-period spectral response acceleration, SS, is less than 0.4 g.~~
~~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.~~

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.

1613*A*.2 Definitions. The following terms are defined in Chapter 2 *except those defined below which shall, for the purposes of this section, have the meanings shown herein. Definition provided in ASCE 7 Section 11.2 shall apply when appropriate in addition to terms defined in this section.*

(Relocated to Chapter 2) ***ACTIVE EARTHQUAKE FAULT.*** *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.*

(Relocated to Chapter 2) ***BASE.*** *See ASCE 7.*

…

(Relocated to Chapter 2) ***DISTANCE FROM AN ACTIVE EARTHQUAKE FAULT.*** *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.*

GENERAL ACUTE CARE HOSPITAL*. See Section 1224.3.*

(Relocated to Chapter 2) ***IRREGULAR STRUCTURE.*** *A structure designed as having one or more plan or vertical irregularities per ASCE 7 Section 12.3.*

…

1613*A*.2 (Formerly 1613A.3) Seismic ground motion values. Seismic ground motion values shall be determined in accordance with this section.

1613A.2.1 (Formerly 1613*A*.3.1) Mapped acceleration parameters. The parameters S_s and S_1 shall be determined from the 0.2 and 1-second spectral response accelerations shown on Figures 1613.2.1(1) through 1613.2.1(8). Where S_1 is less than or equal to 0.04 and S_s is less than or equal to 0.15, the structure is permitted to be assigned to Seismic Design Category A.

…

1613*A*.2.3 (Formerly 1613*A*.3.3) Site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters.

The maximum considered earthquake spectral response acceleration for short periods, S_{MS}, and at 1-second period, S_{M1}, adjusted for site class effects shall be determined by Equations

16A-36 and 16A-37, respectively:

$S_{MS} = F_a S_s$ **(Equation 16A-36)**

$S_{M1} = F_v S_1$ **(Equation 16A-37)**

but S_{MS} shall not be taken less than S_{M1} except when determining the seismic design category in accordance with Section 1613*A*.2.5.

where:

Fa = Site coefficient defined in Table 1613*A*.2.3(1).

Fv = Site coefficient defined in Table 1613*A*.2.3(2).

S_S = The mapped spectral accelerations for short periods as determined in Section 1613*A*.2.1.

S_1 = The mapped spectral accelerations for a 1-second period as determined in Section 1613*A*.2.1.

Where Site Class D is selected as the default site class per Section 1613A.2.2, the value

of Fa shall be not less than 1.2. ~~Where the simplified design procedure of ASCE 7 Section 12.14 is used, the value of Fa shall be determined in accordance with ASCE 7 Section 12.14.8.1 and the values of Fv, SMS and SM1 need not be determined.~~

1613*A*.2.4 (Formerly 1613*A*.3.4) Design spectral response acceleration parameters. Five-percent damped design spectral response acceleration at short periods, *SDS,* and at 1-second period, S_{D1}, shall be determined from Equations 16*A*-38 and 16A-39, respectively:

$S_{DS} = 2/3 S_{MS}$ **(Equation 16A-38)**

$S_{D1} = 2/3\ S_{M1}$ **(Equation 16A-39)**

where:

S_{MS} = The maximum considered earthquake spectral response accelerations for short period as determined in Section 1613*A*.2.3.

S_{M1} = The maximum considered earthquake spectral response accelerations for 1-second period as determined in Section 1613*A*.2.3.

(Figures 1613.2.1(1) through 1613.2.1(8) were stricken in the 2016 CBC and will not be

shown in Chapter 16A. These figures are shown in Chapter 16)

…

1613*A*.2.5 (Formerly 1613*A*.3.5) Determination of seismic design category. Structures classified as Risk Category I, II or III that are located where the mapped spectral response acceleration parameter at 1-second period, S_I, is greater than or equal to 0.75 shall be assigned to Seismic Design Category E. Structures classified as Risk Category IV that are located where the mapped spectral response acceleration parameter at 1-second period, S_1, is greater than or equal to 0.75 shall be assigned to Seismic Design Category F. Other structures shall be assigned to *Seismic Design Category D*. ~~a seismic design category based on their occupancy category and the design spectral response acceleration coefficients, S_{DS} and S_{D1}, determined in accordance with Section 1613.2.4 or the site-specific procedures of ASCE 7. Each building and structure shall be assigned to the more severe seismic design category in accordance with Table 1613.2.5(1) or 1613.2.5(2), irrespective of the fundamental period of vibration of the structure, T.~~

~~**TABLE 1613.2.5(1) - SEISMIC DESIGN CATEGORY BASED ON SHORT-PERIOD (0.2 second) RESPONSE ACCELERATIONS**~~

	~~**RISK CATEGORY**~~		
~~**VALUE OF S_{DS}**~~	~~**I or II**~~	~~**III**~~	~~**IV**~~
~~$S_{DS} < 0.167g$~~	~~A~~	~~A~~	~~A~~
~~$0.167g \le S_{DS} < 0.33g$~~	~~B~~	~~B~~	~~C~~
~~$0.33g \le S_{DS} < 0.50g$~~	~~C~~	~~C~~	~~D~~
~~$0.50g \le S_{DS}$~~	~~D~~	~~D~~	~~D~~

~~**TABLE 1613.2.5(2) - SEISMIC DESIGN CATEGORY BASED ON 1-SECOND PERIOD RESPONSE ACCELERATION**~~

	~~**RISK CATEGORY**~~		
~~**VALUE OF S_{D1}**~~	~~**I or II**~~	~~**III**~~	~~**IV**~~
~~$S_{D1} < 0.067g$~~	~~A~~	~~A~~	~~A~~

~~$0.067g \le S_{D1} < 0.133g$~~	~~B~~	~~B~~	~~C~~
~~$0.133g \le S_{D1} < 0.20g$~~	~~C~~	~~C~~	~~D~~
~~$0.20g \le S_{D1}$~~	~~D~~	~~D~~	~~D~~

1613*A*.2.5.1 (Formerly 1613*A*.3.5.1) Alternative seismic design category determination. *Not permitted by DSA-SS.* ~~Where S_1 is less than 0.75, the seismic design category is permitted to be determined from Table 1613.2.5(1) alone where all of the following apply:~~

1. ~~In each of the two orthogonal directions, the approximate fundamental period of the structure, T, in each of the two orthogonal directions determined in accordance with Section 12.8.2.1 of ASCE 7, is less than 0.8 T_s determined in accordance with Section 11.8.6 of ASCE 7.~~
2. ~~In each of the two orthogonal directions, the fundamental period of the structure used to calculate the story drift is less than T_s.~~
3. ~~Equation 12.8-2 of ASCE 7 is used to determine the seismic response coefficient, C_s.~~
4. ~~The diaphragms are rigid or are permitted to be idealized as rigid in accordance with Section 12.3.1 in ASCE 7 or for diaphragms permitted to be idealized as flexible in accordance with Section 12.3.1 of ASCE 7, the distance between vertical elements of the seismic-force-resisting system does not exceed 40 feet (12 192 mm).~~

1613*A*.2.5.2 (Formerly 1613*A*.3.5.2) Simplified design procedure. *Not permitted by DSA-SS.* ~~Where the alternate simplified design procedure of ASCE 7 is used, the seismic design category shall be determined in accordance with ASCE 7.~~

…

1613*A*.3 (Formerly 1613*A*.3.6) Ballasted photovoltaic panel systems. Ballasted, roof-mounted photovoltaic panel systems need not be rigidly attached to the roof or supporting structure. ~~Ballasted non-penetrating systems shall be designed and installed only on roofs with slopes not more than one unit vertical in 12 units horizontal. Ballasted nonpenetrating systems shall be designed to resist sliding and uplift resulting from lateral and vertical forces as required by Section 1605*A*, using a coefficient of friction determined by acceptable engineering principles. In structures assigned to Seismic Design Category C, D, E or F, ballasted nonpenetrating systems shall be designed to accommodate seismic displacement determined by nonlinear response history analysis or shake-table testing, using input motions consistent with ASCE 7 lateral and vertical seismic forces for nonstructural components on roofs.~~

Exception: [DSA-SS] *Ballasted, roof-mounted photovoltaic panel systems shall comply with ASCE 7 13.6.12.*

…

~~**1613*A*.4.1 Additional seismic-force-resisting systems for seismically isolated structures.** Add the following exception to the end of Section 17.5.4.2 of ASCE 7:~~

~~**Exception:** For isolated structures designed in accordance with this standard, the structural system limitations including the structural height limitations in Table 12.2-1 for ordinary steel concentrically braced frames (OCBFs) as defined in Chapter 11 and *intermediate* moment frames *(IMFs)* as defined in Chapter 11 are permitted to be taken as 160 feet (48 768 mm) for structures assigned to Seismic Design Category D, E or F, provided that the following conditions are satisfied:~~

~~1. The value of R_I as defined in Chapter 17 is taken as 1.~~

~~2. For OCBFs, design is in accordance with AISC 341.~~

~~*3. For IMFs, design is in accordance with AISC 341. In addition, requirements of Section E3.6e of AISC 341 shall be satisfied.*~~

SECTION 1615*A*
TSUNAMI LOADS

1615*A*.1 General. The design and construction of Risk Category III or IV buildings and structures located in the Tsunami Design Zones defined in the *ASCE* Tsunami Design Geodatabase*, or other data determined applicable by the enforcement agency,* shall be in accordance with Chapter 6 of ASCE 7, except as modified by this code. ***[DSA-SS]*** *Tsunami Risk Category for public school, community college and state-owned or state-leased essential services buildings and structures shall be identified and submitted for acceptance by DSA. Determination of the Tsunami Risk Category shall be proposed by the design professional in general responsible charge in coordination with the owner and local community based upon the relative importance of that facility to provide vital services, provide important functions, and protect special populations. The determination of relative importance shall include consideration of a tsunami warning and evacuation plan and procedure when adopted by the local community*

SECTION 1616*A* (Formerly 1615*A*)
STRUCTURAL INTEGRITY

(All numbered subsections within this section are renumbered from 1615A to 1616A)

1616*A*.1 (Formerly 1615*A*.1) General. High-rise buildings that are assigned to Risk Category III or IV shall comply with the requirements of Section 1616*A*.2 if they are frame structures, or Section 1616*A*.3 if they are bearing wall structures.

1615*A*.2 Definitions. The following words and terms are defined in Chapter 2 *except those defined below shall, for the purposes of this section, have the meanings shown herein.*

…

HIGH-RISE BUILDING. *A building with an occupied floor located more than 75 feet (22 860 mm) above the base.*

…

SECTION 1616<u>7</u>A
MODIFICATIONS TO ASCE 7

(All numbered subsections within this section are renumbered from 1616A to 161<u>7</u>A)

1616<u>7</u>A.1 General. *The text of ASCE 7 shall be modified as indicated in Sections 1616<u>7</u>A.1.1 through 1616<u>7</u>A.1.40.*

1616<u>7</u>A.1.1 ASCE 7, Section 1.3. *Modify ASCE 7 Section 1.3 by adding Section <u>1.3.8</u> ~~1.3.6~~ as follows:*

<u>1.3.8</u> ~~1.3.6~~ Structural Design Criteria. *Where design is based on ASCE 7 Chapters 16, 17, or 18, the ground motion, analysis and design methods, material assumptions, testing requirements, and acceptance criteria proposed by the engineer shall be submitted to the enforcement agency in the form of structural design criteria for approval.* ***[DSA-SS]*** *Structural design criteria including wind tunnel design recommendations are required where design is based on ASCE 7 Chapter 31.*

[DSA-SS] *Peer review requirements in Section 322 of the California Existing Building Code shall apply to design reviews required by ASCE 7 Chapters 17 and 18.*

1616<u>7</u>A.1.2 ASCE 7, Section 11.1.3. *Replace last paragraph of ASCE 7 Section 11.1.3 by the following:*

<u>Non-b</u>~~B~~uildings<u> structures similar to buildings *</u>shall be designed and detailed in accordance with Chapter 12.*

1616<u>7</u>A.1.3 *<u>Reserved.</u> ~~ASCE 7, Section 11.4.7. Modify ASCE 7 Section 11.4.7 by adding the following:~~*

~~For buildings assigned to Seismic Design Category E or F, or when required by the building official, a ground motion hazard analysis shall be performed in accordance with ASCE 7 Chapter 21 as modified by Section 1803A.6 of this~~

~~*code.*~~

1616~~7~~A.1.4 ASCE 7, Table 12.2 -1. *Modify ASCE 7 Table 12.2-1 as follows:*

A. BEARING WALL SYSTEMS

5. (Reserved for OSHPD)

17. Light-framed walls with shear panels of all other materials – Not permitted by DSA-SS.

B. BUILDING FRAME SYSTEMS

3. (Reserved for OSHPD)

8. (Reserved for OSHPD)

24. Light-framed walls with shear panels of all other materials – Not permitted by DSA-SS.

26. (Reserved for OSHPD)

C. MOMENT RESISTING FRAME SYSTEMS

2. (Reserved for OSHPD)

3. (Reserved for OSHPD)

4. (Reserved for OSHPD)

12. Cold-formed steel –special bolted moment frame - Not permitted by DSA-SS.

G. CANTILEVER COLUMN SYSTEMS DETAILED TO CONFORM WITH THE REQUIREMENTS FOR:

1. (Reserved for OSHPD)

3. (Reserved for OSHPD)

Exceptions:

1) Systems listed in this section can be used as an alternative system when pre-approved 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~~1613A.4.1~~

1616~~7~~A.1.5 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, C_d , and the system over strength factor, Ω_0, used for the design at any story shall not be less than the largest values of these factors that are used in the same direction at any story above that story.

1616~~7~~A.1.6 ASCE 7, Section 12.2.3.2. *Modify ASCE 7 Section 12.2.3.2 by adding the following additional requirement:*

f. 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.

1616~~7~~A.1.7 ASCE 7, Section 12.2.5.6.1 [DSA-SS] *The exception after the first paragraph is not permitted by DSA-SS.*

1616~~7~~A.1.8 ASCE 7, Section 12.2.5.7.1 [DSA-SS] *The exception after the first paragraph is not permitted by DSA-SS.*

1616~~7~~A.1.9 ASCE 7, Section 12.2.5.7.2 [DSA-SS] *The exception after the first paragraph is not permitted by DSA-SS.*

1616~~7~~A.1.10 ASCE 7, Section 12.3.3.1. *Modify first sentence of ASCE 7 Section 12.3.3.1 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 vertical structural irregularities Type 1b, 5a or 5b of Table 12.3-2 shall not be permitted.*

Exception: *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 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% of the allowable story drift in ASCE 7 Table 12.12-1.*

1616~~7~~A.1.11 ASCE 7, Section 12.7.2. *Modify ASCE 7 Section 12.7.2 by adding item 6 to read as follows:*

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.

16167A.1.12 *Reserved.* ~~***ASCE 7, Section 12.8.1.3.*** *Replace ASCE 7 Section 12.8.1.3 by the following:~~*

~~***12.8.1.3 Maximum S_{DS} Value in Determination of C_s and E_v***~~

~~*The value of C_s and E_v are permitted to be calculated using a value of S_{DS} equal to 1.0, but not less than 70% of S_{DS} as defined in Section 11.4.4, provided that all of the following criteria are met:*~~

~~*7. The structure does not have irregularities, as defined in Section 12.3.2;*~~
~~*8. The structure does not exceed five stories above the base as defined in Section 11.2;*~~
~~*9. The structure has a fundamental period, T, that does not exceed 0.5 seconds, as determined using Section 12.8.2;*~~
~~*10. The structure meets the requirements necessary for the redundancy factor, ρ, to be permitted to be taken as 1.0, in accordance with Section 12.3.4.2;*~~
~~*11. The site soil properties are not classified as Site Class E or F, as defined in Section 11.4.2; and*~~
~~*12.* ***[DSA-SS]*** *The structure is classified as Risk Category I or II, as defined in Section 1.5.1.*~~
~~***13.*** *[Reserved for OSHPD]*~~

16167A.1.13 *Reserved.* ~~***ASCE 7, Section 12.9.4.*** *Replace ASCE 7 Section 12.9.4 as follows:~~*

~~***12.9.4 Scaling Design Values of Combined Response.*** *Modal base shears used to determine forces and drifts shall not be less than the base shears calculated using the equivalent lateral force procedure of section 12.8.~~*

16167A.1.14 *Reserved.* ~~***ASCE 7, Section 12.10.2.1****. Replace ASCE 7 Exception 1 of Section 12.10.2.1 by the following:~~*

~~***EXCEPTIONS:***~~

~~*1. The forces calculated above need not exceed those calculated using the load combinations with overstrength factor of Section 12.4.3.2 with seismic forces determined by Equation 12.10- 3 and transfer forces, where applicable.~~*

16167A.1.15 [Reserved for OSHPD]

1616~~7~~A.1.16 ASCE 7, Section 12.13.1. *Modify ASCE 7 section 12.13.1 by adding Section 12.13.1.1 as follows:*

> ***12.13.1.1 Foundations and superstructure-to-foundation connections.*** *The foundation shall be capable of transmitting the design base shear and the overturning forces from the structure into the supporting soil. Stability against overturning and sliding shall be in accordance with Section 1605A.1.1.*
>
> *In addition, the foundation and the connection of the superstructure elements to the foundation shall have the strength to resist, in addition to gravity loads, the lesser of the following seismic loads:*

…

> *3. Forces from the Load Combinations with overstrength factor in accordance with ASCE 7 Section 12.4.3~~.2~~.1.*

1616~~7~~A.1.17 [Reserved for OSHPD]

1616~~7~~A.1.18 ASCE 7, Section 13.1.4. *Replace ASCE 7 Section 13.1.4 with the following:*

> ***13.1.4 Exemptions.*** *The following nonstructural components are exempt from the requirements of this section:*
>
> *1. Furniture ~~(~~except storage cabinets as noted in Table 13.5-1~~)~~.*
>
> *2. Temporary or moveable or ~~(~~mobile~~)~~ equipment.*
>
> ***Exceptions:***
>
> *a) Equipment shall be anchored if it is permanently attached to the building utility services such as electricity, gas, or water. For the purposes of this requirement, "permanently attached" shall include all electrical connections except plugs for ~~duplex receptacles~~ 110/220 volt receptacles having a flexible cable.*
>
> *b) **[DSA-SS]** ~~The enforcement agency shall be permitted to require temporary attachments for m~~Movable or mobile equipment which is ~~usually stationed in one place and~~ heavier than 400 pounds or has a center of mass located 4 feet (1.22 m) or more above the adjacent floor or roof level that directly support the component ~~when they are not in use for a period longer than 8 hours at a time.~~ shall be restrained in a manner approved by the enforcement agency, Mobile equipment shall be restrained when not in use and is stored, unless the equipment is stored in a storage room that does not house hazardous materials or any facility systems or fixed equipment that can be affected by mobile equipment lacking restraint.*

*c) [**[Reserved for OSHPD]***

*d) [**[Reserved for OSHPD]***

3. Discrete ~~A~~ architectural, mechanical and electrical components and fixed equipment in Seismic Design Categories D, E, or F that are positively attached to the structure and anchorage is detailed on the plans, provided that either: ~~where all of the following apply:~~

~~a. The component is positively attached to the structure;~~

~~b. Flexible connections are provided at seismic separation joints and between the component and associated ductwork, piping, and conduit; and either:~~

The component weighs 400 pounds (1780 N) or less, ~~and has a~~ the center of mass is located 4 feet (1.22 m) 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.

***Exception:** Special Seismic Certification requirements of this code in accordance with Section 1705A.13.3 shall be applicable.*

or

~~c~~b. The component weighs 20 pounds (89 N) or less or, in the case of a distributed system, 5 lb/ft (73 N/m) or less.

***Exception:** The enforcement agency shall be permitted to require attachments for equipment with hazardous contents to be shown on construction documents irrespective of weight.*

***1616~~7~~A.1.19 ASCE 7, Section 13.4.** Replace ASCE 7 Section 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 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.

***Exception: [DSA-SS]** Screw anchors are ~~not prohibited~~ permitted for use*

in building enclosures.

1616~~7~~A.1.20 ASCE 7, Section 13.4.5 *Modify ASCE 7 Section 13.4.5 by adding Section 13.4.5.1 as follows:*

13.4.5.1 Power Actuated Fasteners: *Power actuated fasteners qualified in accordance with ICC-ES AC 70 shall be deemed to satisfy the requirements of Section 13.4.5.*

Power actuated fasteners shall be permitted in seismic shear for components exempt from permit requirements by Section ~~1616A.1.18~~ 1617A.1.18 of this code and for interior non-bearing non-shear wall partitions only. Power actuated fastener shall not be used to anchor seismic bracing, exterior cladding or curtain wall systems.

Exception: *Power actuated fasteners in steel to steel connections prequalified for seismic application by cyclic tests in accordance with ICC-ES AC 70 shall be permitted for seismic design.*

1616~~7~~A.1.21 ASCE 7, Section 13.5.6.2. *Modify ~~Replace~~ ASCE 7, Section 13.5.6.2 with 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:*

~~***13.5.6 Suspended Ceilings.*** *Suspended ceilings shall be in accordance with this section.~~

~~***13.5.6.1 Seismic Forces.*** *The weight of the ceiling, W_p, shall include the ceiling grid; ceiling tiles or panels; light fixtures if attached to, clipped to, or laterally supported by the ceiling grid; and other components that are laterally supported by the ceiling. W_p shall be taken as not less than 4 psf (19 N/m^2).~~

~~*The seismic force, F_p, shall be transmitted through the ceiling attachments to the building structural elements or the ceiling-structure boundary.*~~

~~***13.5.6.2 Seismic Design Requirements.*** *Suspended acoustical tile or lay-in panel ceilings shall be designed in accordance with ASTM E 580 Section 5.2.8 and the requirements of Sections 13.5.6.2.1 and 13.5.6.2.2, or be designed in accordance with Section 13.2.1.1, or be seismically qualified in accordance with Sections 13.2.5 or 13.2.6.~~

~~*13.5.6.2.1. Industry Standard Construction for Acoustical Tile or Lay-In Panel Ceilings. Acoustical tile or lay-in panel ceilings in Seismic Design Categories D, E, and F shall be designed and installed in accordance with ASTM C635, ASTM C636, and ASTM E 580, Section 5 - Seismic Design Categories D, E, and F as modified by Section 13.5.6.2.2.*~~

Exception to Section 13.5.8.1 shall not be used in accordance with ASTM E 580 Section 5.5.

13.5.6.2.3 ~~*13.5.6.2.2*~~ ***Modification to ASTM E 580.*** *Modify ASTM E 580 by the following:*

1. ***Exitways****. Lay-in ceiling assemblies in exitways* ~~*of hospitals*~~ *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 E 580 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" from all pipes, ducts, conduits and equipment that are not braced for horizontal forces, unless approved otherwise by the building official.*

1616~~7~~A.1.22 [Reserved for OSHPD]

1616~~7~~A.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:

[Reserved for OSHPD]

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

1. *For components with R_p greater than 1.5, overstrength factor (Ω_0) for design of anchorage to concrete and vibration isolators along with associated snubbers/connections shall be 2.0. Where I_p = 1.5, overstrength factor (Ω_0) need not exceed the values of R_p for design of anchorage to concrete.*
2. *For Exterior Nonstructural Wall Elements and Connections, overstrength factor (Ω_0) shall be 1.0.*

1616~~6~~7A.1.24 ASCE 7, Section 13.6.5. *~~Modify~~ Replace ASCE 7, Section 13.6.5~~.6 Exceptions 1 and 2~~ as follows:*

~~Exceptions:~~

~~1. Design for the seismic forces of Section 13.3 shall not be required for raceways where either:~~

~~a. Trapeze assemblies are used to support raceways and the total weight of the raceway supported by trapeze assemblies is less than 10 lb/ft (146 N/m), or~~

~~b. The raceway is supported by hangers and each hanger in the raceway run is 12 in. (305 mm) or less in length from the raceway support point to the supporting structure. Where rod hangers are used with a diameter greater than 3/8 inch, they shall be equipped with swivels to prevent inelastic bending in the rod.~~

~~2. Design for the seismic forces of Section 13.3 shall not be required for conduit, regardless of the value of Ip, where the conduit is less than 2.5 in. (64 mm) trade size.~~

13.6.5 Distribution Systems: Conduit, Cable Tray, and Raceways. *Cable trays and raceways shall be designed for seismic forces and seismic relative displacements as required in Section 13.3. Conduit equal to or greater than 2.5 in. (64 mm) trade size and attached to panels, cabinets, or other equipment subject to seismic relative displacement, D_{pl}, shall be provided with flexible connections or designed for seismic forces and seismic relative displacements as required in Section 13.3.*

EXCEPTIONS:

1. Design for the seismic forces and relative displacements of Section 13.3 shall not be required for raceways where flexible connections or other assemblies are provided between the cable tray or raceway and associated components to accommodate the relative displacement, where the cable tray or raceway is

positively attached to the structure, and where one of the following apply:

a. Trapeze assemblies with 3/8 in. (10 mm) or 1/2 in. (13-mm) diameter rod hangers not exceeding 12 in. (305 mm) in length from the conduit, cable tray, or raceway support point to the connection at the supporting structure are used to support the cable tray or raceway, and the total weight supported by any single trapeze is 100 lb (445 N) or less, or

b. The conduit, cable tray, or raceway is supported by individual rod hangers 3/8 in. (10 mm) or 1/2 in. (13 mm) in diameter, and each hanger in the raceway run is 12 in. (305 mm) or less in length from the conduit, cable tray, or raceway support point connection to the supporting structure, and the total weight supported by any single rod is 50 lb (220 N) or less.

2. Design for the seismic forces and relative displacements of Section 13.3 shall not be required for conduit, regardless of the value of I_p, where the conduit is less than 2.5 in. (64 mm) trade size.

Design for the displacements across seismic joints shall be required for conduit, cable trays, and raceways with I_p = 1.5 without consideration of conduit size.

1616~~7~~A.1.25 ASCE 7, Section 13.6.6~~7~~. *Replace ASCE 7, Section 13.6.6~~7~~ ~~Exceptions 1 and 2~~ with the following:*

~~Exceptions:~~

~~The following exceptions pertain to ductwork not designed to carry toxic, highly toxic, or flammable gases or used for smoke control:~~

~~1. Design for the seismic forces of Section 13.3 shall not be required for ductwork where either:~~

~~a. Trapeze assemblies are used to support ductwork and the total weight of the ductwork supported by trapeze assemblies is less than 10 lb/ft (146 N/m); or~~

~~b. The ductwork is supported by hangers and each hanger in the duct run is 12 in. (305 mm) or less in length from the duct support point to the supporting structure. Where rod hangers are used with a diameter greater than 3/8 inch, they shall be equipped with swivels to prevent inelastic bending in the rod.~~

~~2. Design for the seismic forces of Section 13.3 shall not be required where provisions are made to avoid impact with larger ducts or mechanical components or to protect the ducts in the event of such impact; and HVAC ducts have a cross-sectional area of 6 ft^2 (0.557 m^2) or less, or weigh 10 lb/ft (146 N/m) or less.~~

13.6.6 Distribution Systems: Duct Systems*. HVAC and other duct systems shall be designed for seismic forces and seismic relative displacements as required in*

Section 13.3.

EXCEPTIONS: *The following exceptions pertain to ductwork not designed to carry toxic, highly toxic, or flammable gases or not used for smoke control:*

1. Design for the seismic forces and relative displacements of Section 13.3 shall not be required for duct systems where flexible connections or other assemblies are provided to accommodate the relative displacement between the duct system and associated components, the duct system is positively attached to the structure, and where one of the following apply:

a. Trapeze assemblies with 3/8 in. (10 mm) or 1/2 in. (13-mm) diameter rod hangers not exceeding 12 in. (305 mm) in length from the duct support point to the connection at the supporting structure are used to support duct, and the total weight supported by any single trapeze is less than 10 lb/ft (146 N/m) and 100 lb or less; or

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

2. Design for the seismic forces and relative displacements of Section 13.3 shall not be required where provisions are made to avoid impact with other ducts or mechanical components or to protect the ducts in the event of such impact, the distribution system is positively attached to the structure; and HVACR ducts have a cross-sectional area of less than 6 ft^2 (0.557 m^2) and weigh 20 lb/ft (292 N/m) or less.

Components that are installed in line with the duct system and have an operating weight greater than 75 lb (334 N), such as fans, terminal units, heat exchangers, and humidifiers, shall be supported and laterally braced independent of the duct system, and such braces shall meet the force requirements of Section 13.3.1. Components that are installed in line with the duct system, have an operating weight of 75 lb (334 N) or less, such as small terminal units, dampers, louvers, and diffusers, and are otherwise not independently braced shall be positively attached with mechanical fasteners to the rigid duct on both sides. Piping and conduit attached to in-line equipment shall be provided with adequate flexibility to accommodate the seismic relative displacements of Section 13.3.2.

16167A.1.26 ASCE 7, Section ~~13.6.8.3~~ 13.6.7.3. *Replace ASCE 7, Section ~~13.6.8.3~~ 13.6.7.3 with the following:*

~~13.6.8.3 Exceptions.~~ *~~Design of piping systems and attachments for the seismic forces of Section 13.3 shall not be required where one of the following conditions apply:~~*

~~*1. Trapeze assemblies are used to support piping whereby no single pipe exceeds the limits set forth in 3a. or b. below and the total weight of the piping supported by the trapeze assemblies is less than 10 lb/ft (146 N/m).*~~

~~*2. The piping is supported by hangers and each hanger in the piping run is 12 in. (305 mm) or less in length from the top of the pipe to the supporting structure. Where pipes are supported on a trapeze, the trapeze shall be supported by hangers having a length of 12 in. (305 mm) or less. Where rod hangers are used with a diameter greater than 3/8 inch, they shall be equipped with swivels to prevent inelastic bending in the rod.*~~

~~*3. Piping having an R_p in Table 13.6-1 of 4.5 or greater is used and provisions are made to avoid impact with other structural or nonstructural components or to protect the piping in the event of such impact and where the following size requirements are satisfied:*~~

~~*a. For Seismic Design Categories D, E, or F and values of I_p greater than one, the nominal pipe size shall be 1 inch (25 mm) or less.*~~

~~*b. For Seismic Design Categories D, E, or F, where I_p = 1.0 the nominal pipe size shall be 3 inches (80 mm) or less.*~~

~~*The exceptions above shall not apply to elevator piping.*~~

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 in. (10-mm) or 1/2 in. (13-mm) diameter rod hangers not exceeding 12 in. (305 mm) in length from the pipe support point to the connection at the supporting structure, do not support piping with I_p greater than 1.0, and no single pipe exceeds the diameter limits set forth in item 2b below or 2 in. (50 mm) for Seismic Design Categories D, E, or F where I_p is greater than 1.0 and the total weight supported by any single trapeze is 100 lb (445 N) or less, or

2. Piping that has an R_p in Table 13.6-1 of 4.5 or greater is either 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 I_p = 1.0 are supported by individual rod hangers 3/8 in. (10 mm) or 1/2 in. (13 mm) in diameter, where each hanger in the pipe run is 12 in. (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

lb (220 N) or less. In addition, the following limitations on the size of piping shall be observed:

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

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

3. Pneumatic tube systems supported with trapeze assemblies using 3/8-in. (10-mm) diameter rod hangers not exceeding 12 in. (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 lb (445 N) or less.

4. Pneumatic tube systems supported by individual rod hangers 3/8 in. (10 mm) or 1/2 in (13 mm) in diameter, and each hanger in the run is 12 in. (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 lb (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.

1616~~7~~A.1.27 ASCE 7, Section 13.6.~~10~~11.1. *Modify ASCE 7 Section 13.6.~~10~~11.1 by adding Section 13.6.~~10~~11.1.1 as follows:*

13.6.~~10~~11.1.1 Elevators guide rail support. *The design of guide rail support-bracket fastenings and the supporting structural framing shall use the weight of the counterweight or maximum weight of the car plus not less than 40 percent of its rated load. The seismic forces shall be assumed to be distributed one third to the top guiding members and two thirds to the bottom guiding members of cars and counterweights, unless other substantiating data are provided. In addition to the requirements of ASCE 7 Section 13.6.~~10~~11.1, the minimum seismic forces shall be 0.5g acting in any horizontal direction.*

1616~~7~~A.1.28 ASCE 7, Section 13.6.~~10~~11.4. *Replace ASCE 7, Section 13.6.~~10~~11.4 as follows:*

13.6.10.4 Retainer plates. *Retainer plates are required at the top and bottom of the car and counterweight, except where safety devices acceptable to the*

enforcement agency are provided which meet all requirements of the retainer plates, including full engagement of the machined portion of the rail. The design of the car, cab stabilizers, counterweight guide rails and counterweight frames for seismic forces shall be based on the following requirements:

1. *The seismic force shall be computed per the requirements of ASCE 7 Section 13.6.~~10~~11.1. The minimum horizontal acceleration shall be 0.5g for all buildings.*

…

16167A.1.29 *Reserved.* ***~~ASCE 7, Section 16.1.4.~~*** *~~Remove ASCE 7 Sections 16.1.4.1 and 16.1.4.2 and modify Section 16.1.4 by the following:~~*

~~Maximum scaled base shears used to determine forces and drifts shall not be less than the base shears calculated using the equivalent lateral force procedure of Section 12.8.~~

16167A.1.30 *Reserved.* ***~~ASCE 7, Section 16.2.2.~~*** *~~Modify ASCE 7 Section 16.2.2 by adding the following:~~*

~~Requirements of this section shall be deemed to be satisfied for new buildings, using acceptance criteria in Section 16.2.4.2, by the nonlinear modeling parameters in ASCE 41.~~

16167A.1.31 *Reserved.* ***~~ASCE 7, Section 16.2.3.~~*** *~~Modify ASCE 7 Section 16.2.3 by adding the following:~~*

~~Requirements of this section shall be deemed to be satisfied by using load combinations in Sections 12.4.2.3 and 12.4.3.2 with 25% of the required live loads.~~

16167A.1.32 *Reserved.* ***~~ASCE 7, Section 16.2.4.~~*** *~~Modify ASCE 7 Section 16.2.4 by the following:~~*

~~a) Where site is located within 3.1 miles (5 km) of an active fault at least seven ground motions shall be analyzed and response parameters shall be based on larger of the average of the maximum response with ground motions applied as follows:~~

~~3. Each of the ground motions shall have their maximum component at the fundamental period aligned in one direction.~~

~~4. Each of the ground motion's maximum component shall be rotated orthogonal to the previous analysis direction.~~

~~b) Where site is located more than 5 km from an active fault at least 10 ground~~

~~*motions shall be analyzed. The ground motions shall be applied such that one-half shall have their maximum component aligned in one direction and the other half aligned in the orthogonal direction. The average of the maximum response of all the analyses shall be used for design.*~~

1616~~6~~7A.1.33 [Reserved for OSHPD]

1616~~6~~7A.1.34 [Reserved for OSHPD]

1616~~6~~7A.1.35 ASCE 7 Section 17.2.4.7. *Modify ASCE 7, Section 17.2.4.7 by adding the following:*

The effects of uplift shall be explicitly accounted for in the testing of the isolator units.

1616~~6~~7A.1.36 ASCE 7, Section 17.4. *Modify ASCE 7, Section 17.4.2 by adding the following:*

17.4.2.3 Linear Procedure. *Linear procedures shall not be used in Seismic Design Category E and F structures.*

1616A.1.37 *Reserved.* ~~***ASCE 7, Section*** *17.6 Modify ASCE 7, Section 17.6 by adding the following:~~

~~***17.6.1.1 Minimum Seismic Force****. For the response spectrum and linear response history procedures, V_b and V_s, shall not be taken less than those calculated in accordance with Equations 17.5-7 and 17.5-8.*~~

1616~~6~~7A.1.38 ASCE 7, Section 18.3.~~1~~. ~~*Modify*~~ *Replace exception to ASCE 7, Section 18.3~~.1 by replacing the third paragraph~~ with the following:*

EXCEPTION: *If the calculated force in an element of the seismic force resisting system does not exceed 1.5 times its nominal strength for the Risk-Targeted Maximum Considered Earthquake (MCER ~~nor its nominal strength for the Design Earthquake (DE),~~ the element is permitted to be modeled as linear. For this section, the MCER ~~and DE~~ response shall be based on largest response due to a single ground motion and not the average response of suite of ground motions.*

1616~~6~~7A.1.39 [Reserved for OSHPD]

1616~~6~~7A.1.40 [Reserved for OSHPD]

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]

Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

…

CHAPTER 17*A*
SPECIAL INSPECTIONS AND TESTS

Adopt Chapter 17 of the 2018 IBC as Chapter 17A of the 2019 CBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter as amended	**X**	**X**	

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. *Structures regulated by the Division of the State Architect-Structural Safety, which include those applications listed in Sections 1.9.2.1 (DSA-SS), and 1.9.2.2 (DSA-SS/CC). These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.*
2. *(Reserved for OSHPD)*

   Exception: [Reserved for OSHPD]

1701A.1.2 Amendments in this chapter. *DSA-SS*, DSA-SS/CC *adopts 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. *Division of the State Architect - Structural Safety:*

   [DSA-SS] *For applications listed in Section 1.9.2.1.*

   [DSA-SS/CC] *For applications listed in Section 1.9.2.2.*

2. *(Reserved for OSHPD)*

…

1701A.1.3 Reference to other chapters.

1701A.1.3.1 [DSA-SS/CC] *Where reference within this chapter is made to sections in Chapters 16A, 19A, 21A, and 22A, the provisions in Chapters 16, 19, 21 and 22, respectively, shall apply instead. Referenced sections may not directly correlate, but the corresponding DSA-SS/CC sections to such references still apply.*

…

SECTION 1702*A*
NEW MATERIALS

1702*A*.1 General. New building materials, equipment, … ~~*except those defined below which shall, for the purposes of this section chapter, have the meanings shown herein*~~.

…

(Relocated to 202) ~~***PROJECT INSPECTOR. [DSA-SS, DSA-SS/CC]*** *The person approved to provide inspection in accordance with the California Administrative Code, Section 4-333(b). The term "project inspector" is synonymous with "inspector of record."***~~

…

(Relocated to 202) ~~***Quality Assurance (****QA). Special inspections and testing provided by an approved agency employed by the Owner. Project specific testing required by approved construction documents shall be performed by the approved agency responsible for Quality Assurance (QA), unless approved otherwise by the building official.***~~

(Relocated to 202) ~~***Quality Control (QC).*** *Inspections and materials/functionality testing provided by the fabricator, erector, manufacturer or other responsible contractor as applicable.***~~

…

~~***Continuous special inspection.*** *The full-time observation of work requiring special inspection by a special inspector who is present in the area where the work is being performed.***~~

(Relocated to 202 and modified as shown in 202) ~~***Periodic special inspection.*** *The part-time or intermittent observation of work requiring special inspection by a special inspector who is present in the area where the work has been or is being performed and at the completion of the work.***~~

SECTION 1704*A*

SPECIAL INSPECTIONS AND TESTS, CONTRACTOR RESPONSIBILITY AND STRUCTURAL OBSERVATION

…

1704*A*.2 Special inspections and tests. Where application is made to the building official for construction as specified in section 105, the owner ~~or the owners authorized agent, other than contractor,~~ shall employ one or more *approved agencies* to provide special inspections and tests during construction on the types of work specified in Section 1705*A* and identify the approved agencies to the building official. These special inspections and tests are in addition to the inspections by the building official that are identified in Section 110.

…

Exceptions:

1. *Special inspections* and tests are not required for construction of a minor nature or as warranted by conditions in the jurisdiction as *approved* by the *building official*.

2. ***[DSA-SS, DSA-SS/CC]*** *Reference to Section 105 and Section 110 shall be to the California Administrative Code instead.*

~~2. Unless otherwise required by the building official, special inspections are not required for Group U occupancies that are accessory to a residential occupancy including, but not limited to, those listed in Section 312.1.~~

~~3. Special inspections are not required for portions of structures designed and constructed in accordance with the cold-formed steel light-frame construction provisions of Section 2211.1.2 or the conventional light-frame construction provisions of Section 2308.~~

~~**4.** The contractor is permitted to employ the approved agencies where the contractor is also the owner.~~

…

1704*A*.2.3 Statement of special inspections. The applicant shall submit a statement of *special inspections prepared by the registered design professional in responsible charge* in accordance with Section 107.1 as a condition for ~~permit issuance~~ *construction documents review*. This statement shall be in accordance with Section 1704*A*.3.

[DSA-SS, DSA-SS/CC] Reference to Section 107.1 shall be to the California Administrative Code instead.

~~**Exception:** A statement of *special inspections* is not required for portions of structures designed and constructed in accordance with the cold-formed steel~~

~~light frame construction provisions of Section 2211.7.1.2 or the conventional light-frame construction provisions of Section 2308.~~

[DSA-SS, DSA-SS/CC] *Reference to Section 107.1 shall be to the California Administrative Code instead.*

…

1704A.2.4 Report requirement. The *inspector(s) of record and* ~~A~~ *a*pproved agencies shall keep records of special inspections and tests. The *inspector 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, *as required by the California Administrative Code.* Reports shall 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 owner's authorized agent to the building official.

1704*A*.2.5 Special inspection of fabricated items. Where fabrication of structural, load-bearing or lateral load resisting members or assemblies is being conducted on the premises of a fabricator's shop, *special inspection* of the fabricated items shall be performed during fabrication. ~~,~~ ~~except where the fabricator has been approved to perform work without special inspections in accordance with Section 1704.2.5.1.~~

1704*A*.2.5.1 Fabricator approval. *Not permitted by DSA-SS or DSA-SS/CC.* ~~*Special inspections* during fabrication are not required where the work is done on the premises of a fabricator approved to perform such work without *special inspection*. Approval shall be based on review of the fabricator's written fabrication procedures and quality control manuals that provide a basis for control of materials and workmanship, with periodic auditing of fabrication and quality control practices by an *approved* agency or the *building official*. At completion of fabrication, the *approved* fabricator 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 the work was performed in accordance with the *approved construction documents*.~~

…

1704*A*.3.2 Seismic requirements in the statement of special inspections. Where Section 1705*A*.12 or 1705*A*.13 specifies *special inspections* or tests for seismic

resistance, the statement of special inspections shall identify the *equipment/components that require special seismic certification* ~~designated seismic systems~~ and seismic force resisting systems that are subject to *special inspections* or tests

…

1704*A*.4 Contractor responsibility. Each contractor responsible for the construction of a main wind or seismic force resisting system, *installation of equipment/components requiring special seismic certification* ~~designated seismic system~~ or a wind- or seismic-resisting component listed in the statement of special inspections shall submit a written statement of responsibility to the *building official* and the owner or the Owner's authorized agent prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain acknowledgement of awareness of the special requirements contained in the statement of *special inspections*.

1704A.5 Submittal to the Building official. In addition to the submittal of reports of *special inspections* and tests in accordance with Section 1704A.2.4, reports and certificates shall be submitted by the owner or owner's authorized agent to the building official for each of the following:

1. ~~*Certificates of Compliance* for the fabrication of structural, load-bearing or lateral load-resisting members or assemblies on the premises of an *approved fabricator* in accordance with Section 1704.2.5.1.~~
~~*2.*~~ *Certificates of compliance* for the ~~seismic qualification~~ *manufacturer's certification* of non-structural components, supports and attachments in Section 1705A.13.2.
2 ~~*3.*~~ *Certificates of compliance* for the ~~designated seismic system~~ *equipment/components requiring special seismic certification* in accordance with Section 1705A.13.3.

(Renumber remaining list items in 1704A.5 due to deletion of text in item #1.)

…

1704*A*.6 Structural observations. ~~Where required by the provisions of Section 1704.6.1, 1704.6.2, or 1704.6.3, t~~ *T*he owner ~~or the owner's authorized agent~~ shall employ a *registered design professional* to perform structural observations. Structural observation does not include or waive the responsibility for inspection in Section 110 or the special inspections in Section 1705*A* or other sections of this code.

Prior to the commencement of observations, the structural observer shall submit to the *building official* a written statement identifying the frequency and extent of structural observations.

At the conclusion of the work included in the permit, the structural observer shall submit to the *building official* a written statement that the site visits have been made and

identify any reported deficiencies that, to the best of the structural observer's knowledge, have not been resolved.

[DSA-SS, DSA-SS/CC] *Reference to Section 110 shall be to the California Administrative Code instead.*

~~**1704.6.1 Structural observations for structures.** Structural observations shall be provided for those structures where one or more of the following conditions exist:~~

~~1. The structure is classified as *Risk Category IV*.~~

~~2. The structure is a *high-rise building*.~~

~~3. Such observation is required by the *registered design professional* responsible for the structural design.~~

~~4. Such observation is specifically required by the *building official*.~~

~~**1704.6.2 Structural observations for seismic resistance.** Structural observations shall be provided for those structures assigned to *Seismic Design Category* D, E or F where one or more of the following conditions exist:~~

~~1. The structure is classified as *Risk Category* III or IV.~~

~~2. The structure is assigned to *Seismic Design Category* E, is classified as *Risk Category* I or II, and is greater than two *stories above* the *grade plane*.~~

~~**1704.6.3 Structural observations for wind resistance.** Structural observations shall be provided for those structures sited where V_{asd} is 130 mph (58 m/sec) and the structure is classified as *Risk Category* III or IV.~~

SECTION 1705*A*
REQUIRED SPECIAL INSPECTIONS AND TESTS

…

1705A.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~~ *of this section, Chapter 22A and quality control requirements of AISC 360, AISC 341 and AISC 358.*

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 post.

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 adopted:

1. *N4., Item 2. (Quality Assurance Inspector Qualifications)*
2. *N5., Item 2. (Quality Assurance)*
3. *~~[DSA-SS & DSA-SS/CC]~~ N5., Item 3 (Coordinated Inspection)*
4. *~~[DSA-SS & DSA-SS/CC]~~ N5., Item 4 (Inspection of Welding)*
5. *~~[DSA-SS & DSA-SS/CC]~~ N~~7~~6 (Approved Fabricators and Erectors)*
6. *~~[DSA-SS & DSA-SS/CC]~~ N~~8~~7 (Nonconforming Material and Workmanship).*

~~In addition to the quality assurance inspection requirements contained in AISC 360, Section N5 (Minimum Requirements for Inspection of Structural Steel Buildings), the requirements of Table 1705A.2.1 of the California Building Code shall apply.~~

~~In addition to the quality assurance requirements contained in AISC 360, Section N6~~1 ~~(Minimum Requirements for Inspection of Composite Construction),~~ 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.

[DSA-SS] [DSA-SS/CC] *Modify AISC 360, Section N5.5(b) as follows:*

For structures in ~~R~~ risk ~~C~~ category II, III, or IV ~~of Table 1.5-1, Risk Category of Buildings and Other Structures for Flood, Wind Snow, Earthquake and Ice Loads, of ASCE/ SEI 7, Minimum Design Loads for Buildings and Other Structures~~, UT shall be performed by QA on all complete-joint-penetration (CJP) groove welds subject to transversely applied tension loading in butt, T- and corner joints, in material~~s~~ 5/16 in. (8 mm) thick or greater.

…

TABLE 1705A.2.1 REQUIRED ~~VERIFICATION AND~~SPECIAL INSPECTION~~S AND TESTS~~ OF STEEL CONSTRUCTION

TYPE~~VERIFICATION AND INSPECTION~~	***CONTINUOUS SPECIAL INSPECTION***	***PERIODIC SPECIAL INSPECTION***	***REFERENCED STANDARD[a]***	***CBC REFERENCE[a]***
1. Material ~~verification~~ identification and testing of high-strength bolts, nuts and washers:				

a. Identification markings to conform to ASTM standards specified in the approved construction documents.	—	*X*	*RCSC: 1.5, AISC 360: ~~Section~~ A3.3 & J3.1 and applicable ASTM material standards.*	*2202A.1, [DSA-SS/CC] 2202.1*
b. Manufacturers certificate of compliance required.	—	*X*	*RCSC: 1.5 & 2.1; AISC 360: A3.3 & N3.2*	—
c. Testing of high-strength bolts, nuts and washers.	—	—	*RCSC: 7.2, Applicable ASTM material standards*	*2213A.1, [DSA-SS/CC] 2212.6.1*
2. Inspection of high-strength bolting:				
a. Snug-tight joints.	—	*X*	*RCSC: 7-9, AISC 360: ~~Section~~ J3.1, J3.2, M2.5 & N5.6*	*1705A.2.6, 2204A.2, [DSA-SS/CC] 2204.2*
b. Pretensioned and slip-critical joints using turn-of-nut with matchmarking twist-off bolt or direct tension indicator methods of installation.	—	*X*		
c. Pretensioned and slip-critical joints using turn-of-nut without matchmarking or calibrated wrench methods of installation.	*X*	—		
3. Material ~~verification~~ identification and testing of structural steel and cold-formed steel deck:				
a. For structural steel, identification markings to conform to AISC 360.	—	*X*	*AISC 360: ~~Section~~ A3.1*	*2202~~3~~A.1, [DSA-SS/CC] 2202.1*
b. For other steel, identification markings to conform to ASTM standards specified in the approved	—	*X*	*Applicable ASTM material standards*	*2202A.1, [DSA-SS/CC] 2202.1*

construction documents.				
c. Manufacturer's certified test reports.	—	*X*	*AISC 360: A3.1& N3.2*	—
d. Testing of unidentified steel.	—	—	*Applicable ASTM material standards*	*2202A.1, [DSA-SS/CC] 2202.1*
4. Material ~~verification~~ identification of welding consumables and testing of welded elements ~~filler materials~~:				
a. Identification markings to conform to AWS specification in the approved construction documents.	—	*X*	*AISC 360:~~,~~ ~~Section~~ A3.5 & N3.2 and applicable AWS A5 documents*	—
b. Manufacturer's certificate of compliance required.	—	*X*	*AISC 360: N3.2*	—
c. Nondestructive testing of welded joints.	—	—	*AISC 360: N5.5*	
5. Inspection of welding:				
a. Structural steel and cold-formed steel deck:				
1) Complete and partial joint penetration groove welds.	*X*	—	*AISC 360: J2, M2.4, & M4.5, AWS D1.1, AWS D1.8*	*1705A.2.1, 1705A.2.5*
2) Multipass fillet welds.	*X*	—		
3) Single-pass fillet welds > $^{5}/_{16}$"	*X*	—		
4) Plug and slot welds.	*X*	—		

5) Single-pass fillet welds ≤ $^{5}/_{16}$"	—	*X*		
6) Floor and roof deck welds.	—	*X*	*AWS D1.3, SDI QA/QC*	*1705A.2.1, 1705A.2.2, 1705A.2.5*
7) End-welded studs.	—	*X*	*AWS D1.1*	*1705A.2.5, 2213A.2, [DSA-SS/CC] 2212.6.2*
8) Welded sheet steel for cold-formed framing members	—	*X*	*AWS D1.3.*	*1705A.2.5, 1705A.2.4.1*
b. Reinforcing steel:				
1) Verification of weldability of reinforcing steel other than ASTM A706.	—	*X*	*AWS D1.4, ACI 318: ~~Sections~~ 18.2.8, 25.5.7.4, 26.6.4.1*	*1705A.3.1, 1903A.8*
2) Reinforcing steel resisting flexural and axial forces in intermediate and special moment frames, and boundary elements of special structural walls of concrete and shear reinforcement.	*X*	—		
3) Shear reinforcement.	*X*	—		
4) Other reinforcing steel.	—	*X*		
5) Tests of reinforcing bars.	—	—	—	*1910A.2, [DSA-SS/CC] 1909.2.4*
6. Inspection of steel frame joint details for compliance:				
a. Details such as bracing and stiffening.	—	*X*	*AISC 360: N5.8*	*1705A.2.1*
b. Member locations.	—	*X*		

c. Application of joint details at each connection.	—	*X*		

For SI: 1 inch = 25.4 mm.
a. Where applicable, see also Section 1705A.12, Special inspection for seismic resistance

…

1705A.2.2 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.

…

1705A.2.4.1 Light-framed steel truss inspection and testing. *Regardless of truss span, ~~T~~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 2211A.1.3.3 for requirements applicable to manufactured trusses specified therein.*

1705A.2.5 Inspection and tests of structural welding. *Inspection and testing (including non-destructive testing) of all shop and field welding operations shall be in accordance with this section, Section 1705A.2.1, and Table 1705A.2.1. Inspections shall be made by a 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.*

[DSA-SS, DSA-SS/CC] *Welding inspector approval by the enforcement agency shall occur when specified in the California Administrative Code. Nondestructive testing shall be performed by qualified NDT Level II personnel employed by the approved agency.*

The welding inspector shall make a systematic daily record of all welds. In addition to other 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 of end-welded stud shear connectors is in accordance with the requirements of ~~AWS D1.1~~ Section 2213A.2 ([DSA-SS/CC] 2212.6.2) and the approved 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 AWS D1.1, D1.3, D1.4, D1.8, and the approved construction documents.

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, Section 1705A.2.1, and Table 1705A.2.1. Tests of high-strength bolts, nuts, and washers shall be in accordance with Section 2213A.1 ([DSA-SS/CC] 2212.6.1).*

[DSA-SS, DSA-SS/CC] *The minimum requirements for a qualified high-strength bolting special inspector shall be an International Code Council certified Structural Steel and Bolting Special Inspector (S1).*

1705A.3 Concrete construction. *Special inspections* and tests of concrete construction shall be performed in accordance with this section and Table 1705*A*.3.

Exception: *Special inspections and tests* shall not be required for~~:~~

~~1. Isolated spread concrete footings of buildings three stories or less above *grade plane* that are fully supported on earth or rock.~~

~~2. Continuous concrete footings supporting walls of buildings three stories or less above *grade plane* that~~

~~are fully supported on earth or rock where:~~

~~2.1. The footings support walls of light-frame construction;~~

~~2.2. The footings are designed in accordance with Table 1809.7; or~~

~~2.3. The structural design of the footing is based on a specified compressive strength, f'_c, no greater than 2,500 pounds per square inch (psi) (17.2 MPa), regardless of the compressive strength specified in the approved *construction documents* or used in the footing construction.~~

~~3. Nonstructural concrete slabs supported directly on the ground, including prestressed slabs on grade, where the effective prestress in the concrete is less than 150 psi (1.03 MPa).~~

~~4. Concrete foundation walls constructed in accordance with Table 1807.1.6.2.~~

~~5. C~~ concrete patios, driveways and sidewalks, on grade.

1705A.3.1 Welding of reinforcing bars. Special inspections of welding and qualifications of special inspectors for reinforcing bars shall be in accordance with *1705A.2.5,* the requirements of AWS D1.4 for special inspection and of AWS D1.4 for special inspector qualification.

1705A.3.2 Material tests. In the absence of sufficient data or documentation providing evidence of conformance to quality standards for materials in Chapters 19, ~~and~~ 20*, and 26* of ACI 318, *as modified by Chapter 19A,* the building official shall require testing of materials in accordance with the appropriate standards and criteria for the material in Chapters 19, ~~and~~ 20*, and 26* of ACI 318 *as modified by Chapter 19A*. *Tests of reinforcing bars shall be in accordance with Section 1910A.2 ([DSA-SS/CC] 1909.2.4).*

…

1705A.3.4 Inspection and testing of prestressed concrete. *Inspections and tests for prestressed concrete work shall be in accordance with this section. Tests for prestressing steel and anchorage shall be per Section 1910A.3 ([DSA-SS/CC] 1909.2.5). 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 posttensioned members constructed at the site shall be continuously inspected by an 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 posttensioned cables or tendons.*

[DSA-SS, DSA-SS/CC] *Special inspector approval by the enforcement agency shall occur when specified in the California Administrative Code.*

…

1705A.3.7 Composite construction cores*. Composite construction cores shall be taken and tested in accordance with Section 1910A.4 ([DSA-SS/CC] 1909.2.6).*

1705A.3.8 Special Inspections and tests for post-installed anchors in concrete*. Special inspections and tests for post-installed anchors in concrete shall be in accordance with Table 1705A.3 and Section 1910A.5 ([DSA-SS/CC] 1909.2.7).*

…

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

TYPE	CONTINUOUS SPECIAL	PERIODIC SPECIAL	REFERENCED STANDARD[a]	~~IBC~~*CBC* REFERENCE

	INSPECTION	INSPECTION		
1. Inspect *and test* reinforcement, including prestressing tendons, and verify placement.	—	X	ACI 318: Ch. 20, 25.2, 25.3, 26.6.1- 26.6.3	*1908A.3,* 1908*A*.4, *1910A.2, 1910A.3; [DSA-SS/CC] 1909.2.4, 1909.2.5*
2. Reinforcing bar welding: a. Verify weldability of reinforcing bars other than ASTM A706. b. Inspect single pass fillet welds, maximum 5/16", and c. Inspect all other welds.	— X	X X	AWS D1.4 ACI 318: 26.6.4	*1705A.3.1, 1903A.8*
3. Inspect anchors cast in concrete.	—	X	ACI 318: 17.8.2*, 26.7.2, 26.8.2*	—
4. Inspect *and test* anchors post-installed in hardened concrete members.[b, c] a. Adhesive anchors installed horizontally or upwardly inclined orientations to resist sustained tension loads. b. Mechanical anchors and adhesive anchors not defined in 4.a.	X	X	ACI 318: 17.8.2.4 ACI 318: 17.8.2	*1705A.3.8, 1910A.5, [DSA-SS/CC] 1909.2.7* *1705A.3.8, 1910A.5, [DSA-SS/CC] 1909.2.7*
5. Verify use of required design mix.	—	X	ACI 318: Ch.19, *26.4*~~26.4.3, 26.4.4~~	*1903A.5, 1903A.7,* 1904*A*.1, 1904*A*.2, 1908*A*.2, 1908*A*.3, *1910A.1, [DSA-SS/CC] 1909.2.1,*

				1909.2.2, 1909.2.3
6. Prior to *and during* concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	–	ASTM C172 ASTM C31 ACI 318: 26.4, 26.12	*1705A.3.5, 1705A.3.6, 1905A.1.16, 1908A.5,* 1908*A*.10*, [DSA-SS/CC] 1908.5, 1909.3.7,1908.10, 1909.4.1*
7. Inspect concrete and shotcrete for proper application techniques.	X	–	ACI 318: 26.5*, ACI 506: 3.4*	*1908A.5,* 1908*A*.6, 1908*A*.7, 1908*A*.8*, 1908A.10, 1908A.12, [DSA-SS/CC] 1909.4.5*
8. Verify maintenance of specific curing temperature and techniques.	–	X	ACI 318: 26.5.3–26.5.5	1908*A*.9
9. Inspect prestressed concrete for: a. Application of prestressing forces; and b. Grouting of bonded prestressing tendons.	X X	– –	ACI 318: 26.10*.2*	*1705A.3.4*
10. Inspect erection of precast concrete members.	–	X	ACI 318: ~~Ch.~~ 26.*9.2*~~8~~	–
11. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	–	X	ACI 318: *26.10.2,* 26.11.2	*1911A.1, [DSA-SS/CC] 1909.5,*
12. Inspect formwork for shape,	–	X	ACI 318:	*1908A.11, [DSA-*

location and dimensions of the concrete member being formed			26.11.1.2(b)	*SS/CC] 1909.4.4*

…

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 ~~factored~~ design tension on the anchors is less than 100 lbs. 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.4 Masonry construction. Special inspections and tests of masonry construction shall be performed in accordance with the quality assurance program requirements of TMS 402~~, as set forth in Table 3.1.3 Level C requirements,~~ 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 ([DSA-SS/CC] 2115.8). Special inspection and testing of post-installed anchors in masonry shall be required in accordance with requirements for concrete in Chapters 17A and 19A.*

Exception: ~~*Special inspections and tests* shall not be required for:~~

~~1. Empirically designed masonry, glass unit masonry or masonry veneer in accordance with Section 2109, 2110 or Chapter 14, respectively, where they are part of structures 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*A*.4.1 ~~Empirically designed masonry, g~~ *G*lass unit masonry and masonry veneer in Risk ~~Category~~ *Categories II, III or* IV. *Special inspections and tests* for ~~empirically designed masonry,~~ glass unit masonry or masonry veneer designed by Section ~~2109,~~ 2110*A* or Chapter 14, respectively, in structures classified as *Risk ~~Category~~ Categories II, III or* IV, shall be performed in accordance with TMS ~~402~~602 *Tables 3 and 4* Level ~~B~~2 Quality Assurance.

…

1705A.5.4 Structural glued laminated timber. *Manufacture of all structural glued laminated timber shall be continuously inspected by an approved agency.*

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. Each inspected member shall be stamped by the approved agency with an identification mark.

> ***Exception:*** *Special Inspection is not required for non-custom members of 5-1/8 inch maximum width and 18 inch maximum depth, and with a maximum clear span of 32 feet, manufactured and marked in accordance with ANSI/~~AITC~~APA A190.1 Section ~~6.1.1~~13.1 for non-custom members.*

…

1705A.6 Soils.

…

1705A.6.2 Earth retaining shoring. *Special inspections and tests of earth retaining shoring shall be in accordance with applicable portions of Section 1812A*

1705A.6.3 Vibro stone columns. *Special inspections and tests of vibro stone columns for ground improvement shall be in accordance with applicable portions of Section 1813A.*

1705A.7 Driven deep foundations. Special inspections and tests shall be performed during installation of driven deep foundation elements as specified in *1810A.3.3.1.2 and* Table 1705A.7. The approved geotechnical report and the construction documents prepared by the registered design professionals shall be used to determine compliance.

…

1705A.8 Cast-in-place deep foundations. Special inspections and tests shall be performed during installation of cast-in-place deep foundation elements as specified in *1810A.3.3.1.2 and* Table 1705A.8. The approved geotechnical report and the construction documents prepared by the registered design professionals shall be used to determine compliance.

…

1705*A*.11.1 Structural wood. Continuous special inspection is required during field gluing operations of elements of the main windforce-resisting system. Periodic special inspection is required for nailing, bolting, anchoring and other fastening of elements of the main windforce resisting system, including wood shear walls, wood diaphragms, drag struts, braces and hold-downs.

> ~~**Exception:** *Special inspections are* not required for wood shear walls, shear panels and diaphragms, including nailing, bolting, anchoring and other fastening to other components of the main windforce-resisting system, where the specified fastener spacing at the panel edges is more than 4 inches (102 mm) on center.~~

1705*A*.11.2 Cold-formed steel light-frame construction. Periodic special inspection

is required for welding operations of elements of the main windforce-resisting system. Periodic special inspection is required for screw attachment, bolting, anchoring and other fastening of elements of the main windforce-resisting system, including shear walls, braces, diaphragms, collectors (drag struts) and hold-downs.

~~**Exception:** *Special inspections are* not required for cold-formed steel light-frame shear walls and diaphragms, including screwing, bolting, anchoring and other fastening to components of the windforce resisting-system, where either of the following apply:~~

~~1. The sheathing is gypsum board or fiberboard.~~

~~2. The sheathing is wood structural panel or steel sheets on only one side of the shear wall, shear panel or diaphragm assembly and the fastener spacing of the sheathing is more than 4 inches (102 mm) on center (o.c.).~~

…

1705*A*.12 Special inspections for seismic resistance. *Special inspections* for seismic resistance shall be required as specified in Sections 1705*A*.12.1 through 1705*A*.12.9, unless exempted by the exceptions of Section 1704*A*.2.

~~**Exception:** The special inspections specified in Sections 1705.12.1 through 1705.12.9 are not required for structures designed and constructed in accordance with one of the following:~~

~~1. The structure consists of light-frame construction; the design spectral response acceleration at short periods, S_{DS}, as determined in Section 1613.2.4, does not exceed 0.5; and the building height of the structure does not exceed 35 feet (10 668 mm).~~

~~2. The seismic force-resisting system of the structure consists of reinforced masonry or reinforced concrete; the design spectral response acceleration at short periods, S_{DS}, as determined in Section 1613.2.4, does not exceed 0.5; and the building height of the structure does not exceed 25 feet (7620 mm).~~

~~3. The structure is a detached one- or two-family dwelling not exceeding two *stories above grade plane* and does not have any of the following horizontal or vertical irregularities in accordance with Section 12.3 of ASCE 7:~~

~~3.1. Torsional or extreme torsional irregularity.~~

~~3.2. Nonparallel systems irregularity.~~

~~3.3. Stiffness-soft story or stiffness-extreme soft story irregularity.~~

~~3.4. Discontinuity in lateral strength-weak story irregularity.~~

1705A.12.1 Structural steel. *Special inspections* for structural steel shall be in accordance with Section 1705A.12.1.1 or 1705A.12.1.2, as applicable.

1705A.12.1.1 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 quality assurance requirements of AISC 341 *as modified by Section 1705A.2.1 of 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.~~

1705A.12.1.2 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*A*.12.1.1, including struts, collectors, chords, and foundation elements, shall be performed in accordance with quality assurance requirements of AISC 341 *as modified by Section 1705A.2.1 of 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 Cate-gory 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*A*.12.2 Structural wood. For the seismic force-resisting system of structures assigned to *Seismic Design Category* ~~C,~~ D, E or F:

…

~~**Exception:** *Special inspections* are not required for wood shear walls, shear panels and diaphragms, including nailing, bolting, anchoring and other fastening to other elements of the seismic force-resisting system, where the fastener spacing of the sheathing is more than 4 inches (102 mm) on center.~~

1705*A*.12.3 Cold-formed steel light-frame construction. For the seismic force-resisting system of structures assigned to *Seismic Design Category* ~~C,~~ D, E or F, periodic special inspection shall be required for both:

…

Exception: ~~*Special inspections* are not required for cold formed steel light-frame shear walls and diaphragms, including screw installation, bolting, anchoring and other fastening to components of the seismic force-resisting system, where either of the following applies:~~

~~1. The sheathing is gypsum board or fiberboard.~~

~~2. The sheathing is wood structural panel or steel sheets on only one side of the shear wall, shear panel or diaphragm assembly and the fastener spacing of the sheathing is more than 4 inches (102 mm) on center.~~

…

1705*A*.12.4 *Special Inspection for Special Seismic Certification.* ~~**Designated seismic systems.**~~ For structures assigned to *Seismic Design Category* ~~C,~~ D, E or F, the special inspector shall examine *equipment and components* ~~designated seismic systems~~ requiring *special* seismic *certification* ~~qualification~~ in accordance with *Section 1705A.13.3 or* ASCE 7 Section 13.2.2 and verify that the *label*, anchorage and mounting conforms to the *certificate of compliance*.

1705A.12.5 Architectural components. *Periodic special inspection* is required for the erection and fastening of exterior cladding, interior and exterior nonbearing walls*, ceilings*, and interior and exterior veneer in structures assigned to *Seismic Design Category* D, E or F.

Exceptions: ~~*Periodic special inspection* is not required for the following:~~

~~1. Exterior cladding, interior and exterior nonbearing walls and interior and exterior veneer 30 feet (9144 mm) or less in height above grade or walking surface.~~

~~2. *E*xterior cladding and interior and exterior veneer weighing 5 psf (24.5 N/m^2) or less.~~

~~3. Interior nonbearing walls weighing 15 psf (73.5 N/m^2) or less.~~

…

1705*A*.12.6 Plumbing, mechanical and electrical components. *Periodic special inspection* of plumbing, mechanical and electrical components shall be required for the following:

1. Anchorage of electrical equipment for emergency or standby power systems in structures assigned to *Seismic Design Category* ~~C,~~ D, E or F.

2. Anchorage of other electrical equipment in structures assigned to *Seismic Design Category D,* E or F.

3. Installation and anchorage of piping systems designed to carry hazardous materials and their associated mechanical units in structures assigned to *Seismic Design Category* ~~C,~~ D, E or F.

4. Installation and anchorage of ductwork designed to carry hazardous materials in structures assigned to *Seismic Design Category* ~~C,~~ D, E or F.

5. Installation and anchorage of vibration isolation systems in structures assigned to *Seismic Design Category* ~~C,~~ D, E or F where the approved *construction documents* require a nominal clearance of 1/4 inch (6.4 mm) or less between the equipment support frame and restraint.

6. Installation of mechanical and electrical equipment, including duct work, piping systems and their structural supports, where automatic fire sprinkler systems are installed in structures assigned to Seismic Design Category ~~C,~~ D, E or F to verify one of the following:

   6.1. Minimum clearances have been provided as required by Section 13.2.3 ASCE/SEI 7.

   6.2. A nominal clearance of not less than 3 inches (76 mm) has been ~~be~~ provided between fire protection sprinkler system drops and sprigs and structural members not used collectively or independently to support the sprinklers; equipment attached to the building structure; and other systems' piping.

Where flexible sprinkler hose fittings are used, special inspection of minimum clearances is not required.

…

1705A.12.8 Seismic isolation *and damping* systems. Periodic special inspection shall be provided for seismic isolation *and damping* systems in ~~seismically isolated~~ structures assigned to Seismic Design Category ~~B, C,~~ D, E or F during the fabrication and installation of isolator units and energy dissipation devices*. Continuous special inspection is required for prototype and production testing of isolator units and damping devices.*

~~**1705A.12.9 Cold-formed steel special bolted moment frames**. Periodic special inspection shall be provided for the installation of cold-formed steel special bolted moment frames in the seismic force-resisting systems of structures assigned to Seismic Design Category D, E or F.~~

1705*A*.13 Testing for seismic resistance. Testing for seismic resistance shall be required as specified in Sections 1705*A*.13.1.1 through 1705*A*.13.4, unless exempted from special inspections by exceptions of Section 1704*A*.2.

1705A.13.1 Structural Steel. Nondestructive testing for seismic resistance shall be in accordance with Section 1705*A*.13.1.1 or 1705*A*.13.1.2, as applicable.

1705A.13.1.1 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.

~~Exceptions:~~

~~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 Cate-gory 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*A*.13.1.2 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*A*.13.1.1, including struts, collectors, chords, and foundation elements, shall be performed in accordance with quality assurance requirements of AISC 341.

~~Exceptions:~~

~~1. In buildings and structures assigned to Seismic Design Category B or C, nondestructive testing of structural steel elements is not required or 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.~~

1705A.13.2 Nonstructural Components. For structures assigned to *Seismic design Category* ~~B, C,~~ D, E or F, where requirements of Section 13.2.1 of ASCE 7 for non-structural components, supports, or attachments are met by *manufacturer's certification* ~~seismic qualification~~ as specified in Item 2 therein, the *registered design professional*

shall specify on the *approved construction documents* the requirements for seismic *certification* ~~qualification~~ by analysis~~,~~ *or* testing. ~~or experience data.~~ *Certificates of compliance* for the ~~seismic qualification~~ *manufacturer's certification* shall be submitted to the building official as specified in Section 1704*A*.5.

Seismic sway brace~~s~~ing components satisfying requirements of FM 1950 or using an alternative testing protocol approved by the building official shall be deemed to satisfy the requirements of this Section. ~~Component tests shall be supplemented by assembly tests, when required by the building official.~~

1705*A*.13.3 *Special Seismic Certification.* ~~Designated Seismic System.~~ For structures assigned to *Seismic design Category* ~~C,~~ D, E or F*,* ~~and with *designated seismic systems*~~ *equipment and components* that are subject to the requirements of Section 13.2.2 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 ~~or experience data~~ 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.

Active or energized equipment and components shall be certified exclusively on the basis of approved shake table testing in accordance with ICC-ES AC 156 or equivalent shake table testing criteria approved by the building official. Minimum of two equipment/components shall be tested for a product line with similar structural configuration. Where a range of products are tested, the two equipment/components shall be either the largest and a small unit, or approved alternative representative equipment/components.

> ***Exception:*** *When a single product (and not a product line with more than one product with variations) is certified and manufacturing process is ISO 9001 certified, one test shall be permitted.*

For a multi-component system, where active or energized components are certified by tests, connecting elements, attachments, and supports can be justified by supporting analysis.

1705A.13.3.1 [Reserved for OSHPD]

1705A.13.4 Seismic isolation *and damping* systems. Seismic isolation *and damping* systems in ~~seismically isolated~~ structures assigned to Seismic Design Category ~~B, C,~~ D, E or F shall be tested in accordance with Section 17.8 *and 18.~~9~~6* of ASCE 7.

Prototype and production testing and associated acceptance criteria for isolator units and damping devices shall be subject to preapproval by the building official. Testing exemption for similar units shall require approval by the building official.

…

1705A.17 Fire-resistant penetrations and joints. In high-rise buildings or in buildings assigned to Risk Category III or IV, special inspections for through-penetrations, membrane penetration firestops, fire-resistant joint systems and perimeter fire barrier systems that are tested and listed in accordance with Sections 714.3.1.2, 714.4.2, 715.3 and 715.4 shall be in accordance with Section 1705A.17.1 or 1705A.17.2.

[DSA SS, DSA-SS/CC] *Buildings assigned to Risk Categories II, III or IV shall be subject to special inspections for fire-resistant penetrations and joints.*

…

1705A.19 Shotcrete. *All shotcrete work shall be continuously inspected during placing by an approved agency. The special shotcrete inspector shall check the materials, placing equipment, details of construction and construction procedure. The ~~an~~ 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 used and installed in every material respect in compliance with the duly approved plans and specifications.*

[DSA-SS, DSA-SS/CC] *Testing requirements per ACI 506.2 shall also apply.*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 18*A*
SOILS AND FOUNDATIONS

Adopt Chapter 18 of the 2018 IBC as Chapter 18A of the 2019 CBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter as amended	X	X	

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. *Structures regulated by the Division of the State Architect—Structural Safety, which include those applications listed in Section 1.9.2.1 (DSA-SS), and 1.9.2.2 (DSA-SS/CC). These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings*
2. ***[Reserved for OSHPD]***

1801A.1.2 Amendments in this chapter. *DSA–SS, ~~and~~ DSA–SS/CC 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. *Division of the State Architect-Structural Safety:*

   [DSA-SS] *For applications listed in Section 1.9.2.1.*

   [DSA-SS/CC] *For applications listed in Section 1.9.2.2.*

2. ***[Reserved for OSHPD]***

1801A.1.3 Reference to other chapters.

1801A.1.3.1 [DSA-SS/CC] *Where reference within this chapter is made to sections in Chapters 16A, 19A, 21A, and 22A, the provisions in Chapters 16, 19, 21 and 22, respectively, shall apply instead. Referenced sections may not directly correlate, but the corresponding DSA-SS/CC sections to such references still apply.*

…

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 ~~1803.6~~ *1803A.7*. ~~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.~~ *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, certified engineering geologist, and a registered geophysicist, where applicable.

1803*A*.2 Investigations required. Geotechnical investigations shall be conducted in accordance with Sections 1803*A*.3 through ~~1803A.5~~ *1803A.6*.

Exceptions: ~~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.~~

1. *Geotechnical 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 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) or in seismic hazard zones as defined in the Safety Element of the local General Plan. Allowable foundation and lateral soil pressure values may be determined from Table 1806A.2.*
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.*

…

1803*A*.5.4 Ground-water table. A subsurface soil investigation shall be performed to determine whether the existing ground-water table is above or within 5 feet (1524 mm) below the elevation of the lowest floor level where such floor is located below the finished ground level adjacent to the foundation.

~~**Exception:** A subsurface soil investigation to determine the location of the ground-water table shall not be required where waterproofing is provided in accordance with Section 1805.~~

…

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

…

The ~~three~~ Next Generation Attenuation West 2 (NGA-West 2) relations used for the ~~2008~~ 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 ~~(NGA West 1)~~ attenuation relations that were not used for the ~~2008~~ 2014 USGS maps, shall be permitted as additions or substitutions. No fewer than three NGA attenuation relations shall be

utilized.

…

SECTION 1805*A*
DAMPPROOFING AND WATERPROOFING

1805*A*.1 General. Walls or portions thereof that retain earth and enclose interior spaces and floors below grade shall be waterproofed and damp proofed in accordance with this section, with the exception of those spaces containing groups other than residential and institutional where such omission is not detrimental to the building or occupancy.

Ventilation for crawl spaces shall comply with Section 1202.4.

…

1805A.2 Dampproofing. Where hydrostatic pressure will not occur as determined by Section 1803*A*.5.4, floors and walls ~~for other than wood foundation systems~~ shall be dampproofed in accordance with this section. ~~Wood foundation systems shall be constructed in accordance with AWC PWF.~~

…

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

1807A.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*.1.1 Design lateral soil loads. Foundation walls shall be designed for the lateral soil loads ~~set forth in Section 1610*A*.~~ *determined by a geotechnical investigation in accordance with Section 1803A.*

1807*A*.1.2 Unbalanced backfill height. Unbalanced backfill height is the difference in height between the exterior finish ground level and the lower of the top of the concrete footing that supports the foundation wall or the interior finish ground level. Where an interior concrete slab on grade is provided and is in contact with the interior surface of the foundation wall, the unbalanced backfill height shall be permitted to be measured from the exterior finish ground level to the top of the interior concrete slab.

1807*A*.1.3 Rubble stone foundation walls. *Not permitted by DSA –SS & DSA – SS/CC.* ~~Foundation walls of rough or random rubble stone shall be not less than 16 inches (406 mm) thick. Rubble stone shall not be used for foundation walls of~~

~~structures assigned to *Seismic Design Category* C, D, E or F.~~

1807*A*.1.4 Permanent wood foundation systems. *Not permitted by DSA –SS & DSA –SS/CC.* ~~Permanent wood foundation systems shall be designed and installed in accordance with AWC PWF. Lumber and plywood shall be preservative treated in accordance with AWPA U1 (Commodity Specification A, Special Requirement 4.2) and shall be identified in accordance with Section 2303*A*.1.9.1.~~

1807*A*.1.5 Concrete and masonry foundation walls. Concrete and masonry foundation walls shall be designed in accordance with Chapter 19*A* or 21*A*, as applicable.

~~**Exception:** Concrete and masonry foundation walls shall be permitted to be designed and constructed in accordance with Section 1807.1.6.~~

~~**1807.1.6 Prescriptive design of concrete and masonry foundation walls.** Concrete and masonry foundation walls that are laterally supported at the top and bottom shall be permitted to be designed and constructed in accordance with this section.~~

~~**1807.1.6.1 Foundation wall thickness.** The thickness of prescriptively designed foundation walls shall be not less than the thickness of the wall supported, except that foundation walls of not less than 8-inch (203 mm) nominal width shall be permitted to support brick-veneered frame walls and 10-inch-wide (254 mm) cavity walls provided that the requirements of Section 1807.1.6.2 or 1807.1.6.3 are met.~~

~~**1807.1.6.2 Concrete foundation walls**. Concrete foundation walls shall comply with the following:~~

~~1. The thickness shall comply with the requirements of Table 1807.1.6.2.~~

~~2. The size and spacing of vertical reinforcement shown in Table 1807.1.6.2 are based on the use of reinforcement with a minimum yield strength of 60,000 psi (414 Mpa). Vertical reinforcement with a minimum yield strength of 40,000 psi (276 Mpa) or 50,000 psi (345 Mpa) shall be permitted, provided that the same size bar is used and the spacing shown in the table is reduced by multiplying the spacing by 0.67 or 0.83, respectively.~~

~~**TABLE 1807.1.6.2**~~
~~**CONCRETE FOUNDATION WALLS**[b, c]~~
(Deleted Table not shown for clarity)

~~3. Vertical reinforcement, where required, shall be placed nearest the inside face of the wall a distance, *d*, from the outside face (soil face) of the wall. The distance, *d*, is equal to the wall thickness,*t*, minus 1.25 inches (32 mm) plus one-half the bar diameter, *db*, [$d = t - (1.25 + db / 2)$]. The reinforcement shall be~~

placed within a tolerance of ± 3/8 inch (9.5 mm) where *d* is less than or equal to 8 inches (203 mm)or ± 1/2 inch (12.7 mm)where *d* is greater than 8 inches (203 mm).

4. In lieu of the reinforcement shown in Table 1807.1.6.2, smaller reinforcing bar sizes with closer spacings that provide an equivalent cross-sectional area of reinforcement per unit length shall be permitted.

5. Concrete cover for reinforcement measured from the inside face of the wall shall be not less than ¾ inch (19.1 mm). Concrete cover for reinforcement measured from the outside face of the wall shall be not less than 11/2 inches (38 mm) for No. 5 bars and smaller, and not less than 2 inches (51 mm) for larger bars.

6. Concrete shall have a specified compressive strength, *fc'*, of not less than 2,500 psi (17.2 MPa).

7. The unfactored axial load per linear foot of wall shall not exceed 1.2 *t fc'* where *t* is the specified wall thickness in inches.

1807.1.6.2.1 Seismic requirements. Based on the *seismic design category* assigned to the structure in accordance with Section 1613, concrete foundation walls designed using Table 1905.1.7 shall be subject to the following limitations:

1. *Seismic Design Categories* A and B. No additional seismic requirements, except provide reinforcement around openings in accordance with Section 1909.6.3.

2. *Seismic Design Categories* C, D, E and F. Tables shall not be used except as allowed for plain concrete members in Section 1908.1.8.

1807.1.6.3 Masonry foundation walls. Masonry foundation walls shall comply with the following:

1. The thickness shall comply with the requirements of Table 1807.1.6.3(1) for plain masonry walls or Table 1807.1.6.3(2), 1807.1.6.3(3) or 1807.1.6.3(4) for masonry walls with reinforcement.

2. Vertical reinforcement shall have a minimum yield strength of 60,000 psi (414 Mpa).

3. The specified location of the reinforcement shall equal or exceed the effective depth distance, *d*, noted in Tables 1807.1.6.3(2), 1807.1.6.3(3) and 1807.1.6.3(4) and shall be measured from the face of the exterior (soil) side of the wall to the center of the vertical reinforcement. The reinforcement shall be placed within the tolerances specified in TMS 602, Article 3.3.B.11 of the specified location.

TABLE 1807.1.6.3(1)
PLAIN MASONRY FOUNDATION WALLS[a,b,c]

(Deleted Table not shown for clarity)

4. Grout shall comply with Section 2103.12.

5. Concrete masonry units shall comply with ASTM C 90.

6. Clay masonry units shall comply with ASTM C 652 for hollow brick, except compliance with ASTM C 62 or ASTM C 216 shall be permitted where solid masonry units are installed in accordance with Table 1807.1.6.3(1) for plain masonry.

7. Masonry units shall be laid in running bond and installed with Type M or S mortar in accordance with Section 2103.2.1.

8. The unfactored axial load per linear foot of wall shall not exceed 1.2 $t f'_m$ where t is the specified wall thickness in inches and f'_m is the specified compressive strength of masonry in pounds per square inch.

9. Not less than 4 inches (102 mm) of solid masonry shall be provided at girder supports at the top of hollow masonry unit foundation walls.

10. Corbeling of masonry shall be in accordance with Section 2104.2. Where an 8-inch (203 mm) wall is corbeled, the top corbel shall not extend

TABLE 1807.1.6.3(2)
8-INCH MASONRY FOUNDATION WALLS WITH REINFORCEMENT WHERE d _ 5 INCHES[a,b,c]

(Deleted Table not shown for clarity)

higher than the bottom of the floor framing and shall be a full course of headers not less than 6 inches (152 mm) in length or the top course bed joint shall be tied to the vertical wall projection. The tie shall be W2.8 (4.8 mm) and spaced at a maximum horizontal distance of 36 inches (914 mm). The hollow space behind the corbelled masonry shall be filled with mortar or grout.

1807.1.6.3.1 Alternative foundation wall reinforcement. In lieu of the reinforcement provisions for masonry foundation walls in Table 1807.1.6.3(2), 1807.1.6.3(3) or 1807.1.6.3(4), alternative reinforcing bar sizes and spacings having an equivalent cross-sectional area of reinforcement per linear foot (mm) of wall shall be permitted to be used, provided that the spacing of reinforcement does not exceed 72 inches (1829 mm) and reinforcing bar sizes do not exceed No. 11.

1807.1.6.3.2 Seismic requirements. Based on the *seismic design category* assigned to the structure in accordance with Section 1613, masonry foundation walls designed using Tables 1807.1.6.3(1) through 1807.1.6.3(4) shall be subject to the following limitations:

1. *Seismic Design Categories* A and B. No additional seismic requirements.

2. *Seismic Design Category* C. A design using Tables 1807.1.6.3(1) through

~~1807.1.6.3(4) is~~

~~**TABLE 1807.1.6.3(3)**~~
~~**10-INCH MASONRY FOUNDATION WALLS WITH REINFORCEMENT WHERE d = 6.75 INCHES** [a, b, c]~~
(Deleted Table not shown for clarity)

~~subject to the seismic requirements of Section 7.4.3 of TMS 402.~~

~~3. *Seismic Design Category* D. A design using Tables 1807.1.6.3(2) through 1807.1.6.3(4) is subject to the seismic requirements of Section 7.4.4 of TMS 402.~~

~~4. *Seismic Design Categories* E and F. A design using Tables 1807.1.6.3(2) through 1807.1.6.3(4) is subject to the seismic requirements of Section 7.4.5 of TMS 402.~~

~~**TABLE 1807.1.6.3(4)**~~
~~**12-INCH MASONRY FOUNDATION WALLS WITH REINFORCEMENT WHERE d = 8.75 INCHES**[a,b,c]~~
(Deleted Table not shown for clarity)

1807*A*.2 Retaining walls. Retaining walls shall be designed in accordance with Sections 1807*A*.2.1 through 1807*A*.2.3. *Freestanding cantilever walls shall be design in accordance with Section 1807A.2.4.*

1807*A*.2.1 General. Retaining walls shall be designed to ensure stability against overturning, sliding, excessive foundation pressure and water uplift.

1807*A*.2.2 Design lateral soil loads. Retaining walls shall be designed for the lateral soil loads ~~set forth in Section 1610~~. *determined by a geotechnical investigation in accordance with Section 1803A and shall not be less than eighty percent of the lateral soil loads determined in accordance with Section 1610A. For use with the load combinations, lateral soil loads due to gravity loads surcharge shall be considered gravity loads and seismic earth pressure increases due to earthquake shall be considered as seismic loads.* For structures assigned to Seismic Design Category D, E, or F, the design of retaining walls supporting more than 6 feet (1829 mm) of backfill height shall incorporate the additional seismic lateral earth pressure in accordance with the geotechnical investigation where required in Section 1803*A*.2.

…

1807A.2.4 Freestanding Cantilever Walls. *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 R_p 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*A*
FOUNDATIONS

1808*A*.1 General. Foundations shall be designed and constructed in accordance with Sections 1808*A*.2 through 1808*A*.9. Shallow foundations shall satisfy the requirements of Section 1809*A*. Deep foundations shall satisfy the requirements of Section 1810*A*.

1808*A*.2 Design for capacity and settlement. Foundations shall be so designed that the allowable bearing capacity of the soil is not exceeded, and that differential settlement is minimized. Foundations in areas with expansive soils shall be designed in accordance with the provisions of Section 1808*A*.6.

The enforcing agency may require an analysis of foundation elements to determine subgrade deformations in order to evaluate their effect on the superstructure, including story drift.

…

1808*A*.8 Concrete foundations. The design, materials and construction of concrete foundations shall comply with Sections1808*A*.8.1 through 1808*A*.8.6 and the provisions of Chapter 19*A*.

~~Exception: Where concrete footings supporting walls of light-frame construction are designed in accordance with Table 1809.7, a specific design in accordance with Chapter 19 is not required.~~

…

TABLE 1808*A*.8.1
MINIMUM SPECIFIED COMPRESSIVE STRENGTH f'_c OF CONCRETE OR GROUT

FOUNDATION ELEMENT OR CONDITION	SPECIFIED COMPRESSIVE STRENGTH, f'_c
~~1. Foundations for structures assigned to Seismic Design Category A, B or C~~	~~2,500 psi~~

~~2a. Foundations for Group R or U occupancies of light-frame construction, two stories or less in height, assigned to Seismic Design Category D, E or F~~	~~2,500 psi~~
~~2b~~ *1*.Foundations for ~~other~~ structures assigned to Seismic Design Category D, E or F	3,000 psi
~~3~~ *2*. Precast nonprestressed driven piles	4,000 psi
~~4~~ *3*. Socketed drilled shafts	4,000 psi
~~5~~ *4*. Micropiles	4,000 psi
~~6~~ *5.* Precast prestressed driven piles	5,000 psi

For SI: 1 pound per square inch = 0.00689MPa.

…

1808*A*.8.6 Seismic requirements. See Section 1905*A* for additional requirements for foundations of structures assigned to *Seismic Design Category* ~~C,~~ D, E or F.

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

~~**Exceptions:**~~

~~1. Detached one- and two-family dwellings of light-frame construction and two stories or less above *grade plane* are not required to comply with the provisions of Section 18.13 of ACI 318.~~

~~2. Section 18.13.4.3(a) of ACI 318 shall not apply.~~

…

SECTION 1809*A*
SHALLOW FOUNDATIONS

…

1809*A*.7 Prescriptive footings for light-frame construction. *Not permitted by DSA – SS & DSA –SS/CC.* ~~Where a specific design is not provided, concrete or masonry-unit footings supporting walls of light-frame construction shall be permitted to be designed in accordance with Table 1809.7.~~

~~TABLE 1809.7~~
~~PRESCRIPTIVE FOOTINGS SUPPORTING WALLS OFLIGHT-FRAME CONSTRUCTION~~$_{a,b,c,d,e}$
(Deleted Table not shown for clarity)

1809*A*.8 Plain concrete footings. *Not permitted by DSA –SS & DSA –SS/CC.* ~~The edge thickness of plain concrete footings supporting walls of other than light-frame construction shall be not less than 8 inches (203 mm) where placed on soil or rock.~~

~~**Exception:** For plain concrete footings supporting Group R-3 occupancies, the edge thickness is permitted to be 6 inches (152 mm), provided that the footing does not extend beyond a distance greater than the thickness of the footing on either side of the supported wall.~~

1809*A*.9 Masonry-unit footings. *Not permitted by DSA –SS & DSA –SS/CC.* ~~The design, materials and construction of masonry-unit footings shall comply with Sections 1809.9.1 and 1809.9.2, and the provisions of Chapter 21.~~

~~**Exception:** Where a specific design is not provided, masonry-unit footings supporting walls of light-frame construction shall be permitted to be designed in accordance with Table 1809.7.~~

~~**1809.9.1 Dimensions.** Masonry-unit footings shall be laid in Type M or S mortar complying with Section 2103.8 and the depth shall be not less than twice the projection beyond the wall, pier or column. The width shall be not less than 8 inches (203 mm) wider than the wall supported thereon.~~

~~**1809.9.2 Offsets.** The maximum offset of each course in brick foundation walls stepped up from the footings shall be 11/2 inches (38 mm) where laid in single courses, and 3 inches (76 mm) where laid in double courses.~~

1809*A*.10 *Reserved.* ~~**Pier and curtain wall foundations.** Except in *Seismic Design Categories* D, E and F, pier and curtain wall foundations shall be permitted to be used to support light-frame construction not more than two *stories above grade plane*, provided that the following requirements are met:~~

~~1. All load-bearing walls shall be placed on continuous concrete footings bonded integrally with the *exterior wall* footings.~~

~~2. The minimum actual thickness of a load-bearing masonry wall shall not be less than 4 inches (102 mm) nominal or 35/8 inches (92 mm) actual thickness, and shall be bonded integrally with piers spaced 6 feet (1829 mm) on center (o.c.).~~

~~3. Piers shall be constructed in accordance with Chapter 21 and the following:~~

~~3.1. The unsupported height of the masonry piers shall not exceed 10 times their~~

~~least dimension.~~

~~3.2. Where structural clay tile or hollow concrete masonry units are used for piers supporting beams and girders, the cellular spaces shall be filled solidly with concrete or Type M or S mortar.~~

~~**Exception:** Unfilled hollow piers shall be permitted where the unsupported height of the pier is not more than four times its least dimension.~~

~~3.3. Hollow piers shall be capped with 4 inches (102 mm) of solid masonry or concrete or the cavities of the top course shall be filled with concrete or grout.~~

~~4. The maximum height of a 4-inch (102 mm) load-bearing masonry foundation wall supporting wood frame walls and floors shall not be more than 4 feet (1219 mm) in height.~~

~~5. The unbalanced fill for 4-inch (102 mm) foundation walls shall not exceed 24 inches (610 mm) for solid masonry, nor 12 inches (305 mm) for hollow masonry.~~

…

1809*A*.12 Timber footings. *Not permitted by DSA –SS & DSA –SS/CC.* ~~Timber footings shall be permitted for buildings of Type V construction and as otherwise *approved* by the *building official*. Such footings shall be treated in accordance with AWPA U1 (Commodity Specification A, Use Category 4B). Treated timbers are not required where placed entirely below permanent water level, or where used as capping for wood piles that project above the water level over submerged or marsh lands. The compressive stresses perpendicular to grain in untreated timber footings supported upon treated piles shall not exceed 70 percent of the allowable stresses for the species and grade of timber as specified in the AF&PA NDS.~~

…

1810*A*.3.2 Materials. The materials used in deep foundation elements shall satisfy the requirements of Sections 1810*A*.3.2.1 through 1810*A*.3.2.8, as applicable.

…

~~**1810.3.2.1.2 ACI 318 Equation (25.7.3.3).** Where this chapter requires detailing of concrete deep foundation elements in accordance with Section 18.7.5.4 of ACI 318, compliance with Equation (25.7.3.3) of ACI 318 shall not be required.~~

…

1810*A*.3.2.4 Timber. *Not permitted by DSA –SS & DSA –SS/CC.* ~~Timber deep foundation elements shall be designed as piles or poles in accordance with AF&PA NDS. Round timber elements shall conform to ASTM D 25. Sawn timber~~

~~elements shall conform to DOC PS-20.~~

~~**1810.3.2.4.1 Preservative treatment.** Timber deep foundation elements used to support permanent structures shall be treated in accordance with this section unless it is established that the tops of the untreated timber elements will be below the lowest ground-water level assumed to exist during the life of the structure. Preservative and minimum final retention shall be in accordance with AWPA U1 (Commodity Specification E, Use Category 4C) for round timber elements and AWPA U1 (Commodity Specification A, Use Category 4B) for sawn timber elements. Preservative-treated timber elements shall be subject to a quality control program administered by an *approved agency*. Element cutoffs shall be treated in accordance with AWPA M4.~~

…

1810*A*.3.8.3 Precast prestressed piles. Precast prestressed concrete piles shall comply with the requirements of Sections 1810*A*.3.8.3.1 through 1810*A*.3.8.3.3.

…

1810*A*.3.8.3.2 Seismic reinforcement in Seismic Design Category C. *Not permitted by DSA –SS & DSA –SS/CC.* ~~For structures assigned to *Seismic Design Category* C in accordance with Section 1613, precast prestressed piles shall have transverse reinforcement in accordance with this section. The volumetric ratio of spiral reinforcement shall not be less than the amount required by the following formula for the upper 20 feet (6096 mm) of the pile.~~

~~$\rho_s = 0.04(f'_c / f_{yh})[2.8 + 2.34P/ f'_c A_g)]$~~ **~~(Equation 18-5)~~**

~~where:~~

~~f'_c = Specified compressive strength of concrete, psi (MPa).~~

~~f_{yh} = Yield strength of spiral reinforcement ≤ 85,000 psi (586 MPa).~~

~~ρ_s = Spiral reinforcement index (vol. spiral/vol. core).~~

~~Not less than one-half the volumetric ratio required by Equation 18-5 shall be provided below the upper 20 feet (6096 mm) of the pile.~~

~~**Exception:** The minimum spiral reinforcement index required by Equation 18-5 shall not apply in cases where the design includes full consideration of load combinations specified in ASCE 7, Section 2.3.6 and the applicable overstrength factor, Ω_0. In such cases, minimum spiral reinforcement index shall be as specified in Section 1810.3.8.1.~~

1810*A*.3.8.3.3 Seismic reinforcement in Seismic Design Categories D through F. For structures assigned to Seismic Design Category D, E or F precast prestressed piles shall have transverse reinforcement in accordance with the following:

…

5. Where the transverse reinforcement consists of circular spirals, the volumetric ratio of spiral transverse reinforcement in the ductile region shall comply with the following:

   $\rho_s = 0.06(f'_c / f_{yh})[2.8 + 2.34\ P/ f'_c\ A_g)]$ **(Equation 18*A*-6)**

   but not exceed:

   $\rho_s = 0.021$ **(Equation 18*A*-7)**

   where:

   A_g = Pile cross-sectional area square inches (mm^2).

   f'_c = Specified compressive strength of concrete, psi (MPa).

   P = Axial load on pile, pounds (kN), as determined from Equations 16*A*-5 and 16*A*-7.

   f_{yh} = Yield strength of spiral reinforcement ≤ 85,000 psi (586 MPa).

   ρ_s = Spiral reinforcement index (vol. spiral/vol. core).

~~This required amount of spiral reinforcement is permitted to be obtained by providing an inner and outer spiral.~~

> ~~**Exception:** The minimum spiral reinforcement required by Equation 18-6 shall not apply in cases where the design includes full consideration of load combinations specified in ASCE 7, Section 2.3.6 and the applicable overstrength factor, Ωo. In such cases, minimum spiral reinforcement shall be as specified in Section 1810.3.8.1.~~

…

1810*A*.3.8.3.4 Axial load limit in Seismic Design Categories C through F. For structures assigned to Seismic Design Category C, D, E, or F, the maximum factored axial load on precast prestressed piles subjected to a combination of seismic lateral force and axial load shall not exceed the following values:

1. 0.2 $f'_c\ A_g$ for square piles

2. 0.4 $f'_c A_g$ for circular or octagonal piles

Exception: *Where the axial load from seismic forces is amplified by the applicable overstrength factor,Ωo, the axial load limits may be increased by 2 times,*

…

1810*A*.3.9.4.2.1 Site Classes A through D. For Site Class A, B, C or D 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 *at* ~~of~~ the bottom of the pile cap. A transverse spiral reinforcement ratio of not less than one-half of that required in Section 18.7.5.4 ~~(a)~~ of ACI 318 shall be permitted *for concrete deep foundation elements.*

1810*A*.3.9.4.2.2 Site Classes E and F. For Site Class E or F 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 seven times the least element dimension *at* ~~of~~ the *bottom of the* pile cap and within seven times the least element dimension *at* ~~of~~ the interfaces of strata that are hard or stiff and strata that are liquefiable or are composed of soft- to medium-stiff clay.

…

1810*A*.3.10 Micropiles. Micropiles shall be designed and detailed in accordance with Sections 1810*A*.3.10.1 through 1810*A*.3.10.4.

…

~~**1810A.3.10.4 Seismic reinforcement.** For structures assigned to *Seismic Design Category* C, a permanent steel casing shall be provided from the top of the micropile down to the point of zero curvature. For structures assigned to *Seismic Design Category* D, E or F, the micropile shall be considered as an alternative system in accordance with Section 104.11. The alternative system design, supporting documentation and test data shall be submitted to the *building official* for review and approval.~~

1810A.3.10.4 Seismic requirements*. For structures assigned to Seismic Design Category D, E, or F, a permanent steel casing having a minimum thickness of 3/8" shall be provided from the top of the micropile down to a minimum of 120 percent of the point of zero curvature. Capacity of micropiles shall be determined in accordance with Section 1810A.3.3 by at least two project specific pre-production tests for each soil profile, size and depth of micropile. At least two percent of all production piles shall be proof tested to the load determined in accordance with Section 1616A.1.16.*

Steel casing length in soil shall be considered as unbonded and shall not be considered as contributing to friction. Casing shall provide confinement at least equivalent to hoop reinforcing required by ACI 318 Section 18.13.4.

Reinforcement shall have Class 1 corrosion protection in accordance with PTI Recommendations for Prestressed Rock and Soil Anchors. Steel casing design shall include at least 1/16" corrosion allowance.

Micropiles shall not be considered as carrying any horizontal loads.

…

1810.3.11 Pile caps. Pile caps shall be of reinforced concrete, and shall include all elements to which vertical deep foundation elements are connected, including grade beams and mats. The soil immediately below the pile cap shall not be considered as carrying any vertical load, with the exception of a combined pile raft. *A combined pile raft foundation shall be an alternate system.* The tops of vertical deep foundation elements shall be embedded not less than 3 inches (76 mm) into pile caps and the caps shall extend not less than 4 inches (102 mm) beyond the edges of the elements. The tops of elements shall be cut or chipped back to sound material before capping.

…

1810*A*.4.1.5 Defective timber piles. *Not permitted by DSA –SS & DSA –SS/CC.* ~~Any substantial sudden change in rate of penetration of a timber pile shall be investigated for possible damage. If the sudden change in rate of penetration cannot be correlated to soil strata, the pile shall be removed for inspection or rejected.~~

…

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.2 Adoption. *Except for the modifications as set forth in Sections 1811A.3 and 1811A.4, all Prestressed Rock and Soil Foundation Anchors shall comply with PTI Recommendations for Prestressed Rock and Soil Anchors.*

1811A.3 Geotechnical Requirements*. Geotechnical report for the Prestressed Rock & Soil Foundation Anchors shall address the following:*

…

7. *Class I Corrosion Protection is required for all permanent anchors. ~~Geotechnical Report shall specify the corrosion protection recommendations~~ A minimum of Class II Corrosion Protection is required for temporary anchors in service less than or equal to two (2) years.*
8. *Performance test shall be at a minimum of 1.6 times the design loads, but shall not exceed 80 percent of the specified minimum tensile strength of the tendons. There shall be a minimum of two preproduction test anchors. Preproduction test anchors shall be tested to ultimate load or maximum of 0.80 times the specified minimum tensile strength of the tendon. A Creep test is required for all prestressed anchors with greater than 10 kips of lock-off prestressing load.*

…

SECTION 1812A
EARTH RETAINING SHORING

1812A.1 General. *The requirements of this section shall apply to temporary and permanent earth retaining shoring…*

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 ~~one (1)~~ or equal to two (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 two (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.*

…

1812A.4 Design and testing. *Except for the modifications as set forth in Sections 1812A.4.1 through 1812A.4.3 below, all Prestressed Rock and Soil Tie-back Anchors shall comply with PTI Recommendations for Prestressed Rock and Soil Anchors ~~(PTI-2004)~~.*

1812A.4.1 Geotechnical requirements. *The geotechnical report for the earth retaining shoring shall address the following:*

…

4. *Allowable bond stress at the ground / grout interface and applicable factor of safety for ultimate bond stress for the anchor. For permanent anchors, a minimum factor of safety of 2.0 shall be applied to ground soil interface as*

required by PTI ~~2004~~ Recommendations for Prestressed Rock and Soil Anchors Section 6.6.

…

6. *Class I Corrosion Protection is required for all permanent anchors. ~~The Geotechnical Report shall specify the corrosion protection recommendations~~ A minimum of Class II Corrosion Protection is required for temporary anchors in service less than or equal to two (2) years.*

…

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

…

1. *After a satisfactory test, each anchor shall be locked-off in accordance with Section 8.4 of PTI ~~2004~~ Recommendations for Prestressed Rock and Soil Anchors.*

…

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

…

13. *Testing of anchors may be performed after post-grouting operations provided grout has reached strength of 3,000 psi as required by PTI ~~2004~~ Recommendations for Prestressed Rock and Soil Anchors Section 6.11.*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 19
CONCRETE

Adopt Chapter 19 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter as amended (amended sections listed below)	-	X	
1901.1.1		X	
1901.1.2		X	
1901.1.3		X	
1901.1.4		X	
1909		X	

Italics are used for text within Sections 1903 through 1905 of this code to indicate provisions that differ from ACI 318.

...

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. [DSA-SS/CC] *The scope of application of Chapter 19 is as follows:*

1. *Structures ~~Community college buildings~~ regulated by the Division of the State Architect—Structural Safety/Community Colleges (DSA-SS/CC), which include those applications ~~as~~ listed in Section 1.9.2.2.*
2. ***(Reserved for OSHPD)***

1901.1.2 Amendments in this chapter. [DSA-SS/CC] *DSA-SS/CC adopts 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. *Division of the State Architect—Structural Safety/Community Colleges:*

   [DSA-SS/CC] *For applications listed in Section 1.9.2.2.*

2. ***(Reserved for OSHPD)***

1901.1.3 Reference to other chapters. [DSA-SS/CC] *Where reference within this chapter is made to sections in Chapters 17 and 18, the provisions in Chapters 17A, and 18A respectively shall apply instead.*

1901.1.4 Amendments. [DSA-SS/CC]

1. ***(Reserved for OSHPD)***
2. ***[DSA-SS/CC]*** *See Section 1909 for additional requirements applicable to community colleges*

…

SECTION 1909
ADDITIONAL REQUIREMENTS FOR COMMUNITY COLLEGES [DSA-SS/CC]

…

1909.2 Tests and materials. *Where required, special inspections and tests shall be in accordance with Chapter 17A and this section.*

…

1909.2.7 Tests for post-installed anchors in concrete. *When post-installed anchors are used in lieu of cast-in place bolts, the installation verification test loads frequency and acceptance criteria shall be in accordance with this section.*

1909.2.7.1 General. *Test loads or torques and acceptance criteria shall be shown on the construction documents.*

If any anchor fails testing, all anchors of the same type 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.

1909.2.7.2 Testing procedure. *The test procedure shall be as permitted by an approved evaluation report using criteria adopted in this code. All post-installed anchors shall be tension tested.*

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

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

1909.2.7.3 Test Frequency. *When post-installed anchors are used for sill plate bolting applications, 10 percent of the anchors shall be tested.*

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

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.

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.

Exceptions:

1. *Undercut anchors that allow visual confirmation of full set shall not require testing.*
2. *Where the ~~factored~~ design tension on anchors is less than 100 lbs. and those anchors are clearly noted on the approved construction documents, only 10 percent of those anchors shall be tested.*
3. *Where adhesive anchor systems are used to install reinforcing dowel bars in hardened concrete, only 25% 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 12.*
    c. *The dowels are uniformly distributed across seismic force resisting members (such as shear walls, collectors and diaphragms).*

    Anchors to be tested shall be selected at random by the special inspector/inspector of record (IOR).
4. *Testing of shear dowels across cold joints in slabs on grade~~,~~ where the slab is not part of the lateral force-resisting system shall not be required.*
5. *Testing is not required for power actuated fasteners used to attach tracks of interior non-shear wall partitions for shear only~~,~~ where there are at least three fasteners per segment of track.*

…

1909.4 Shotcrete.

1909.4.1 General. *Shotcrete shall also conform to the provisions of ACI 506.2. The specified compressive strength of shotcrete shall not be less than 4,000 psi (27.6 MPa).*

1909.4.~~1~~2 Preconstruction tests. *A test panel prepared in accordance with Section 1908.5 is required. Approval from the enforcement agency must be obtained prior to performing test panels.*

1909.4.3 Aggregate. *For structural walls, when total rebar in any direction is more than 0.31 in^2 / ft. or rebar size is larger than # 5, shotcrete shall conform to course aggregate grading No. 2 in accordance with Table 1.1.1 of ACI 506R.*

1909.4.~~2~~4 Surface preparation. *Concrete or masonry to receive shotcrete shall have the entire surface thoroughly cleaned and roughened by ~~sand blasting,~~ a suitable method, and just prior to receiving shotcrete, shall be thoroughly cleaned of all debris, dirt and dust. Concrete and masonry shall be wetted before shotcrete is deposited, but not so wet as to overcome suction.*

1909.4.~~3~~5 Joints. *The film of laitance which forms on the surface of the shotcrete shall be removed within approximately two hours after application by brushing with a stiff broom. If this film is not removed within two hours, it shall be removed by thorough wire brushing or sand blasting. Construction joints over eight hours old shall be thoroughly cleaned with air and water prior to receiving shotcrete.*

1909.4.6 Curing. *Shotcrete shall be maintained above 50°F (10°C) during the curing periods specified in 1908.9.*

1909.4.4~~7~~ 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.

1909.4.~~5~~8 Placing. *Shotcrete shall be placed in accordance with ACI 506.2 and ACI 506R. In addition to testing requirements in Section 1908, special inspection and testing shall be in accordance with 1705A.19.*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 19*A*

CONCRETE

Adopt Chapter 19 of the 2018 IBC as Chapter 19A of the 2019 CBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	**X**	**-**	

(All existing California amendments that are not revised below shall continue without change)

Italics are used for text within Sections 1903A through 1905A of this code to indicate provisions that differ from ACI 318. 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.

1901A.1.1 Application. *The scope of application of Chapter 19A is as follows:*

1. Structures regulated by the Division of the State Architect-Structural Safety (DSA-SS), which include those applications listed in Section 1.9.2.1. These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.

2. ***(Reserved for OSHPD)***

1901A.1.2 Amendments in this chapter. *DSA-SS 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. *Division of the State Architect-Structural Safety:*
   [DSA-SS] *For applications listed in Section 1.9.2.1*

2. ***(Reserved for OSHPD)***

…

SECTION 1903A

SPECIFICATIONS FOR TESTS AND MATERIALS

…

1903A.8 Welding of reinforcing bars *- Modify ACI 318 Section 26.6.4.1(b) by adding the following:*

~~Shop fusion welded stirrup/tie cage (or spiral assemblies) consisting of low-alloy steel reinforcing stirrups/ties conforming to ASTM A706 and~~ 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 ~~shall be~~ are permitted when performed under continuous competent control in a fabrication shop. ~~The fusion welds shall be made by machines using electric resistance welds.~~ Tack welding of primary reinforcing bars together or to stirrups/ties is not permitted. ~~Fusion welding of~~ hHolding wire~~s~~ weld locations shall not occur ~~is not permitted~~ 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.

[DSA-SS] Exception: *Mat reinforcing for slabs or isolated footings shall be permitted to have holding wires located no more than six bar diameters from the free end of reinforcing. Such free ends shall not be associated with any welded splices, couplers, or other free-end modifications involving reinforcement development.*

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 1910A.2. Test reports shall be available on request to the approved agency, design professional and enforcement agency.

…

SECTION 1904*A*
DURABILITY REQUIREMENTS

…

1904*A*.1 Structural concrete. Structural concrete shall conform to the durability requirements of ACI 318.

~~Exception:~~ *~~For Group R-2 and R-3 occupancies not more than three stories above grade plane, the specified compressive strength, f 'c, for concrete in basement walls,~~*

~~*foundation walls, exterior walls and other vertical surfaces exposed to the weather shall be not less than 3,000 psi (20.7 MPa).*~~

…

SECTION 1905*A*
MODIFICATIONS TO ACI 318

1905*A*.1 General. The text of ACI 318 shall be modified as indicated in Sections 1905*A*.1.1 through ~~1905.1.8~~ *1905A.1.~~16~~15*.

~~**1905.1.1 ACI 318, Section 2.3.** Modify existing definitions and add the following definitions to ACI 318, Section 2.3.~~

~~**DESIGN DISPLACEMENT.** Total lateral displacement expected for the design-basis earthquake, *as specified by Section 12.8.6 of ASCE 7.*~~

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

~~**ORDINARY STRUCTURAL PLAIN CONCRETE WALL.** A wall complying with the requirements of Chapter 22, *excluding 22.6.7*.~~

~~**SPECIAL STRUCTURAL WALL**. A cast-in-place or precast wall complying with the requirements of 18.2.4 through 18.2.8, 18.10 and 18.11, 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 structural wall," it shall be deemed to mean a "special structural wall."*~~

…

1905A.1.8 **ACI 318, Section 17.2.3.** Modify ACI 318 Sections 17.2.3.4.2, 17.2.3.4.3(d) and 17.2.3.5.2 to read as follows:

…

17.2.3.5.2 – Where the shear component of the strength-level earthquake force applied to anchors exceeds 20 percent of the total factored anchor shear force associated with the same load combination, anchors and their attachments shall be designed in accordance with 17.2.3.5.3. The anchor design shear strength for resisting earthquake forces shall be determined in accordance with 17.5.

Exceptions:

1. For the calculation of the in-plane shear strength of anchor bolts attaching wood sill plates of bearing or non-bearing walls of light-frame wood structures to foundations or foundation stem walls, the in-plane design shear strength in accordance with 17.5.2 and 17.5.3 need not be computed and 17.2.3.5.3 shall be deemed to be satisfied provided all of the following are met:

1.1. The allowable in-plane shear strength of the anchor is determined in accordance with AWC NDS Table 1~~1~~2E for lateral design values parallel to grain.

…

2. For the calculation of the in-plane shear strength of anchor bolts attaching cold-formed steel track of bearing or non-bearing walls of anchor bolts attaching cold-formed steel track of bearing or non-bearing walls of light-frame construction to foundations or foundation stem walls the in-plane design shear strength in accordance with 17.5.2 and 17.5.3 need not be computed and 17.2.3.5.3 shall be deemed to be satisfied provided 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 ~~E~~J 3.3.1.

…

1905.1.2 ACI 318, Section 18.2.1. Modify ACI 318 Sections 18.2.1.2 and 18.2.1.6 to read as follows:

18.2.1.2 – Structures assigned to Seismic Design Category A shall satisfy requirements of Chapters 1 through 17 and 19 through 26; Chapter 18 does not apply. Structures assigned to *Seismic Design Category* B, C, D, E or F also shall satisfy 18.2.1.3 through 18.2.1.7, as applicable. *Except for structural elements of plain concrete complying with Section 1905.1.7 of the International Building Code, structural elements of plain concrete are prohibited in structures assigned to Seismic Design Category C, D, E or F.*

18.2.1.6 – Structural systems designated as part of the seismic-force-resisting system shall be restricted to those *permitted by ASCE 7*. Except for *Seismic Design Category* A, for which Chapter 18 does not apply, the following provisions shall be satisfied for each structural system designated as part of the seismic-force-resisting system, regardless of the *Seismic Design Category*:

(a) Ordinary moment frames shall satisfy 18.3.

~~(b) Ordinary reinforced concrete structural walls *and ordinary precast structural walls* need not satisfy any provisions in Chapter 18.~~

~~(c) Intermediate moment frames shall satisfy 18.4.~~

~~(d) Intermediate precast *structural* walls shall satisfy 18.5.~~

~~(e) Special moment frames shall satisfy 18.6 through 18.9.~~

~~(f) Special structural walls shall satisfy 18.10.~~

~~((g) Special structural walls constructed using precast concrete shall satisfy 18.11.~~

~~Special moment frames and special structural walls shall also satisfy 18.2.4 through 18.2.8.~~

~~**1905.1.3 ACI 318, Section 18.5.** Modify ACI 318, Section 18.5, by adding new Section 18.5.2.2 and renumbering existing Sections 18.5.2.2 and 18.5.2.3 to become 18.5.2.3 and 18.5.2.4, respectively:~~

~~*18.5.2.2 – Connections that are designed to yield shall be capable of maintaining 80 percent of their design strength at deformation induced by the design displacement or shall use type 2 mechanical splices.*~~

~~18.5.2.3 – Elements of the connection that are not designed to yield shall develop at least 1.5 S_y.~~

~~18.5.2.4 – In structures assigned to SDC D, E or F, Wall piers shall be designed in accordance with 18.10.8 or 18.14 in ACI 318.~~

1905A.1.10 **ACI 318, Section 18.5.** ***[DSA-SS]*** Modify ACI 318, Section 18.5, by *replacing Section 18.5.2.1*, adding new Section 18.5.2.2 and renumbering existing Sections 18.5.2.2 and 18.5.2.3 to become 18.5.2.3 and 18.5.2.4, respectively:

18.5.2.1 – In connections between wall panels, yielding shall be restricted to steel elements or reinforcement. In connections between wall panels and the foundation, they shall be designed per Section ~~1616A.1.16~~ 1617A.1.16.

…

~~**1905.1.4 ACI 318, Section 18.11.** Modify ACI 318, Section 18.11.2.1, to read as follows:~~

~~18.11.2.1 – Special structural walls constructed using precast concrete shall satisfy all the requirements of 18.10 for cast-in-place special structural walls in addition to Section 18.5.2.~~

~~**1905.1.5 ACI 318, Section 18.13.1.1.** Modify ACI 318, Section 18.13.1.1 to read as follows:~~

18.13.1.1 – Foundations resisting earthquake-induced forces or transferring earthquake-induced forces between a structure and ground shall comply with the requirements of 18.13 and other applicable provisions of ACI 318 *unless modified by Chapter 18 of the International Building Code*

1905A.1.13 **ACI 318, Section 18.13.1.1.** Modify ACI 318, Section 18.13.1.1, to read as follows:

18.13.1.1 – Foundations resisting earthquake-induced forces or transferring earthquake-induced forces between a structure and ground shall comply with the requirements of Section 18.13 and other applicable provisions of ACI 318 *unless modified by Chapter 18A of the California Building Code.*

1905.1.6 ACI 318, Section 14.6. Modify ACI 318, Section 14.6, by adding new Section 14.6.2 to read as follows:

14.6.2.1 – Detailed plain concrete structural walls.

14.6.2.1 – Detailed plain concrete structural walls are walls conforming to the requirements of ordinary structural plain concrete walls and 14.6.2.2.

14.6.2.2 – Reinforcement shall be provided as follows:

(a) Vertical reinforcement of at least 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 14.6.1.

(b) Horizontal reinforcement at least 0.20 square inch (129 mm2) in cross-sectional area shall be provided:

1. Continuously at structurally connected roof and floor levels and at the top of walls;

2. At the bottom of load-bearing walls or in the top of foundations where doweled to the wall; and

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 3 above, shall be continuous in the wall.

1905.1.7 ACI 318, Section 14.1.4. Delete ACI 318, Section 14.1.4, and replace with the following:

~~*14.1.4 – Plain concrete in structures assigned to Seismic Design Category C, D, E or F.*~~

~~*14.1.4.1 – Structures assigned to Seismic Design Category C, D, E or F shall not have elements of structural plain concrete, except as follows:*~~

~~*(a) Structural plain concrete basement, foundation or other walls below the base 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 not be less than 71/2 inches (190 mm), and the wall shall retain no more than 4 feet (1219 mm) of unbalanced fill. Walls shall have reinforcement in accordance with 14.6.1.*~~

~~*(b) Isolated footings of plain concrete supporting pedestals or columns are permitted, provided 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.*~~

~~*(c) Plain concrete footings supporting walls are permitted, provided the footings have at least 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, a minimum of 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. In Seismic Design Category A, B, and C, detached one- and two-family dwellings three stories or less in height and constructed with stud-bearing walls, plain concrete footings without longitudinal reinforcement supporting walls are permitted.*~~

~~*2. For foundation systems consisting of a plain concrete footing and a plain concrete stemwall, a minimum of one bar shall be provided at the top of the stemwall and at the bottom of the footing.*~~

~~*3. Where a slab on ground is cast monolithically with the footing, one No. 5 bar is permitted to be located at either the top of the slab or bottom of the footing.*~~

1905A.1.1413 ACI 318, Table 21.2.2. *Replace Table 21.2.2 as follows:*

…

1905A.1.~~15~~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.1.~~16~~15 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 (345m^3) of concrete, or not less than once for each 2,000 square feet (186 m^2) of surface area for slabs or walls. Additional samples for seven-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.

SECTION 1906*A*
STRUCTURAL PLAIN CONCRETE

Not permitted by DSA-SS.

~~**1906.1 Scope.** The design and construction of structural plain concrete, both cast-in-place and precast, shall comply with the minimum requirements of ACI 318, as modified in Section 1905.~~

~~**Exception:** For Group R-3 occupancies and buildings of other occupancies less than two stories above grade plane of light-frame construction, the required footing thickness of ACI 318 is permitted to be reduced to 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*A*
SHOTCRETE

1908*A*.1 General. Shotcrete is mortar or concrete that is pneumatically projected at high velocity onto a surface. Except as specified in this section, shotcrete shall conform to the requirements of this chapter for ~~plain or~~ reinforced concrete *and the provisions of ACI 506R. The specified compressive strength of shotcrete shall not be less than 4,000 ~~3,000~~ psi (~~20.69~~27.6 MPa).*

[DSA-SS] Exception: *The reference to ACI 506R shall be to ACI 506.2, unless otherwise approved by the enforcing agent. ~~The specified compressive strength of structural shotcrete shall not be less than 4,000 psi (27.58 MPa) unless specifically approved by the enforcing agent.~~*

*Concrete or masonry to receive shotcrete shall have the entire surface thoroughly cleaned and roughened by ~~sand blasting,~~ 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 wetted before shotcrete is deposited, but not so wet as to overcome suction. ~~Sand for sand blasting shall be clean, sharp and uniform in size, with no particles that will pass a 50-mesh screen.~~**~~[DSA-SS]~~** ~~Cleaning and roughening provisions of ACI 506.2 Section 2.4.2 may alternatively be permitted.~~*

…

1908*A*.3 Aggregate. Coarse aggregate, if used, shall not exceed $^3/_4$ inch (19.1 mm).

For ~~shear~~ structural walls, when total rebar in any direction is more than 0.31 in^2 / ft. or rebar size is larger than # 5, shotcrete shall conform to course aggregate grading No. 2 ~~per~~ in accordance with Table 1.1.1 of ACI 506R.

~~[DSA-SS] Exception:~~ *~~The table reference shall be to Table 1908A.3 instead.~~*

~~TABLE 1908A.3~~
~~GRADING LIMITS FOR COMBINED AGGREGATES~~

~~Sieve size, U.S. standard square mesh~~	~~Percent by weight passing individual sieves~~	
	~~Grading No. 1~~	~~Grading No. 2~~
~~3/4 in. (19 mm)~~	~~—~~	~~—~~
~~1/2 in. (12 mm)~~	~~—~~	~~100~~
~~3/8 in. (10 mm)~~	~~100~~	~~90 to 100~~

~~*No. 4 (4.75 mm)*~~	~~*95 to 100*~~	~~*70 to 85*~~
~~*No. 8 (2.4 mm)*~~	~~*80 to 98*~~	~~*50 to 70*~~
~~*No. 16 (1.2 mm)*~~	~~*50 to 85*~~	~~*35 to 55*~~
~~*No. 30 (600 µm)*~~	~~*25 to 60*~~	~~*20 to 35*~~
~~*No. 50 (300 µm)*~~	~~*10 to 30*~~	~~*8 to 20*~~
~~*No. 100 (150 µm)*~~	~~*2 to 10*~~	~~*2 to 10*~~

…

1908*A*.5 Preconstruction tests. ~~Where preconstruction test are required by Section 1908.4, a~~ *A* test panel shall be shot, cured, cored or sawn, examined and tested prior to commencement of the project. The sample panel shall be representative of the project and simulate job conditions as closely as possible. The 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. 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*A*.5.

…

1908*A*.9 Curing. During the curing periods specified herein, shotcrete shall be maintained above ~~40°~~*50*°F (~~4°~~*10*°C) and in moist condition.

> ***~~[DSA-SS] Exception:~~*** *~~Curing temperatures shall be maintained in accordance with the more restrictive requirements specified in ACI 506.2 Section 3.7.1.2, unless specifically approved by the enforcing agent.~~*

…

1908A.12 Placing. *Shotcrete shall be placed in accordance with ACI 506R.*

> ***[DSA-SS] Exception:*** *The reference to ACI 506R shall be to ACI 506.2 and ACI 506R.*

…

SECTION 1910A
CONCRETE, REINFORCEMENT AND ANCHOR TESTING

…

1910A.5 Tests for Post-Installed Anchors in Concrete. *When post-installed anchors are used in lieu of cast-in place bolts, the installation verification test loads, frequency, and acceptance criteria shall be in accordance with this section.*

1910A.5.1 General. *Test loads or torques and acceptance criteria shall be shown on the approved construction documents.*

If any anchor fails testing, all anchors of the same type 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.

1910A.5.2 Testing Procedure. *The test procedure shall be as permitted by an approved evaluation report using criteria adopted in this code. All post-installed anchors shall be tension tested.*

> ***Exception [DSA-SS]****: Torque controlled post installed anchors and screw type anchors shall be permitted to be tested using torque based on an approved ~~test~~ 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.

1910A.5.3 Test Frequency. *When post-installed anchors are used for sill plate bolting applications, 10 percent of the anchors shall be tested.*

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

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.

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.

Exceptions:

1. *Undercut anchors that allow visual confirmation of full set shall not require testing.*
2. *Where the ~~factored~~ design tension on anchors is less than 100 lbs. and those anchors are clearly noted on the approved construction documents, only 10 percent of those anchors shall be tested.*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

…

CHAPTER 20
ALUMINUM

Adopt Chapter 20 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter as amended (amended sections listed below)	**X**	**X**	
2001.1.1	**X**	**X**	
2001.1.2	**X**	**X**	
2002.1 *Exception*	**X**	**X**	
2003	**X**	**X**	

(All existing California amendments that are not revised below shall continue without change)

SECTION 2001
GENERAL

2001.1 Scope. This chapter shall govern the quality, design, fabrication and erection of aluminum.

2001.1.1 Application. [DSA-SS, DSA-SS/CC] *The scope of application of Chapter 20 is as follows:*

1. (Reserved for OSHPD)

2. Structures regulated by the Division of the State Architect—Structural Safety, which include those applications listed in Section 1.9.2.1 (DSA-SS), and 1.9.2.2 (DSA-SS/CC). These applications include public elementary and secondary

schools, community colleges and state-owned or state-leased essential services buildings

2001.1.2 Amendments in this chapter. [DSA-SS, DSA-SS/CC] *DSA-SS, DSA-SS/CC 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 OSHPD)

2. Division of the State Architect - Structural Safety:

[DSA-SS] *- For applications listed in Section 1.9.2.1.*

[DSA-SS/CC] *- For applications listed in Section 1.9.2.2.*

SECTION 2002
MATERIALS

2002.1 General. Aluminum used for structural purposes in buildings and structures shall comply with AA ASM 35 and AA ADM 1. The nominal loads shall be the minimum design loads required by Chapter 16.

Exception: [DSA – SS] *The reference to Chapter 16 shall be to Chapter 16A.*

SECTION 2003 – TESTING AND INSPECTION

2003.1 Testing and Inspection. [DSA–SS & DSA–SS/CC] Testing and ~~I~~*inspection of* ~~A~~*aluminum shall be required in accordance with the requirements for steel in Chapter 17A, except references to AWS D1.1 shall be to AWS D1.2.*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 21
MASONRY

Adopt Chapter 21 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter as amended (amended sections listed below)	**-**	**X**	
2101.1.1		**X**	
2101.1.2		**X**	
2101.1.3		**X**	
2101.1.4		**X**	
~~*2114*~~*2115*		**X**	

(All existing California amendments that are not revised below shall continue without change)

SECTION 2101
GENERAL

2101.1 Scope. This chapter shall govern the materials, design, construction and quality of masonry.

2101.1.1 ~~Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC)~~ Application. [DSA-SS/CC] *The scope of application of Chapter 21 is as follows:*

1. Structures ~~Community college buildings~~ regulated by the Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC) which include those applications ~~as~~ listed in Section 1.9.2.2.

2. ***(Reserved for OSHPD)***

2101.1.2 Amendments in this chapter. [DSA-SS/CC] *DSA-SS/CC adopt~~s~~ this chapter and all amendments.*

Exception: *~~Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC) a~~Amendments adopted by only one agency appear in this chapter preceded with the ~~appropriate~~ acronym of the adopting agency, as follows:*

1. ***[DSA-SS/CC]*** *- For ~~community college buildings~~ applications listed in Section 1.9.2.2.*

2. ***(Reserved for OSHPD)***

2101.1.3 Reference to other chapters. [DSA-SS/CC] *Where reference within this chapter is made to sections in Chapters 17 and 18, the provisions in Chapters 17A*

and 18A respectively shall apply instead.

2101.1.4 Amendments. [DSA-SS/CC] *See Section ~~2114~~2115 for additional requirements.*

…

SECTION ~~2114~~2115
ADDITIONAL REQUIREMENTS FOR COMMUNITY COLLEGES [DSA-SS/CC]

2114~~5~~.1 General. *In addition to the provisions of this chapter, the following requirements shall apply to community college buildings regulated by the Division of the State Architect- Structural Safety/Community Colleges (DSA-SS/CC).*

2114~~5~~.1.1 Prohibitions. *The following design, systems and materials are not permitted by DSA:*

1. *Unreinforced masonry*
2. *Autoclaved aerated concrete (AAC) masonry*
3. *Empirical design of masonry and prescriptive design of masonry partition walls*
4. *Ordinary reinforced masonry shear walls*
5. *Intermediate reinforced masonry shear walls*
6. *Prestressed masonry shear walls*
7. *Direct design of masonry*

2115.2 (Renumber remaining subsections due to new subsection addition) Metal reinforcement and accessories. *The frequency of sampling for unidentifiable reinforcing bars may alternatively be in accordance with Section 1909.2.4.*

…

2115.4 (Renumber remaining subsections due to new subsection addition) Masonry construction. *Architectural cast stone construction shall be considered as an alternative system.*

…

2114~~5~~.~~5~~7 Specified compressive strength. *The specified compressive strength, f 'm, assumed in design shall be not less than 2,000 psi (13.79 MPa) for all masonry construction using materials and details of construction required herein. ~~Testing of the constructed masonry shall be provided in accordance with Section 2114.6.2.~~*

In no case shall the f 'm assumed in design exceed 3,000 psi (20.68 MPa).

2114~~5~~.~~6~~8 Additional testing requirements.

2114~~5~~.~~6~~8.1 Mortar and grout tests. *At the beginning of all masonry work, at*

least one test sample of the mortar shall be taken on three successive working days and at least at one-week intervals thereafter. Where mortar is based on a proportion specification, mortar shall be sampled and tested during construction in accordance with ASTM C780 Annex 4 and 5 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 ~~approved~~ preblended mortars in conformance with ASTM C270 with a valid evaluation report.

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. The grout *shall meet the minimum strength requirement given in ASTM C476/TMS 602 Section 2.2 for mortar and grout. Test specimens for grout shall be made as set forth in ASTM C 1019.*

Additional samples shall be taken whenever any change in materials or job conditions occur, as determined by the building official. When the prism test method is used in accordance with TMS 602 Articles 1.4 B.3 or 1.4 B.4 during construction, the tests in this section are not required.

> ***Exception:*** *For non-bearing non-shear masonry walls not exceeding total wall height of 12' feet above ~~wall base~~ top of foundation, mortar test shall be permitted to be limited to those at the beginning of masonry work for each mix design.*

2114~~5~~.6~~8~~.2 Masonry core testing. *Not less than two cores shall be taken from each building for each 5,000 square feet (465 m^2) of the masonry wall area or fraction thereof. The approved agency shall perform or observe the coring of the masonry walls and sample locations shall be subject to approval of the registered design professional.*

Core samples shall comply with the following:

1. *Cored no sooner than 7 days after grouting of the selected area;*
2. *Be a minimum of 3-3/4" in nominal diameter; and*
3. *Sampled in such a manner as to exclude any masonry unit webs, mortar joint, or reinforcing steel. If all cells contain reinforcement, alternate core locations or means to detect void or delamination shall be selected by the registered design professional and approved by the building official.*

Visual examination of all cores shall be made by an approved agency and the condition of the cores reported as required by the California Administrative Code. Shear test shall test both joints between the grout core and the outside wythes or

face shell of the masonry. 28 days after grouting of the sample area using a shear test apparatus acceptable to the enforcement agency. Core samples shall not be soaked before testing. Core samples to be tested shall be stored in sealed plastic bags or non-absorbent containers immediately after coring and for at least 5 days prior to testing. The average unit shear value for each pair of cores (4 shear tests) from each 5,000 square feet of wall area (or less) on the cross section of the core shall not be less than 2.5 $\sqrt{f'm}$ psi.

All cores shall be submitted to an approved agency for examination, even where the core specimens failed during the cutting operation. The approved agency shall report the location where each core was taken, the findings of their visual examination of each core, identify which cores were selected for shear testing, and the results of the shear tests.

Exceptions:

1. *Core sampling and testing is not required for non-bearing non-shear masonry walls, not exceeding total wall height of 12' feet above ~~wall base~~ top of foundation, built with single-wythe hollow unit concrete masonry that attaches opposite face shells using webs cast as single unit, when designed using an f'_m not exceeding 2,000 psi (13.79 MPa)..*
2. *An infrared thermographic survey or other nondestructive test procedures, shall be permitted to be approved as an alternative system to detect voids or delamination in grouted masonry in-lieu of core sampling and testing.*

2114~~5~~.7~~9~~ Modifications to TMS 402~~/ACI 530/ASCE 5~~.

***2114~~5~~.7~~9~~.1** Modify TMS 402~~/ACI 530/ASCE 5~~, Section 7.4.4 as follows:*

*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.*

***Exception:** Reinforced hollow-unit masonry used for freestanding site walls or interior nonbearing non-shear wall partitions shall have horizontal reinforcing spaced not more than 4'-0" on center, except as required by TMS 402 Section 7.4.5 when applicable.*

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 equal 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~~/ACI 530/ASCE 5~~ shall be considered as continuous reinforcement.

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.

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 elsewhere required.

When the reinforcement in bearing walls is designed, placed and anchored in position as for columns, the allowable stresses shall be as for columns.

Joint reinforcement shall not be used as principal reinforcement in masonry.

*2. **Minimum reinforcement for masonry columns.** 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 for the full column height. 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.*

*3. **Anchor bolts.** Bent bar anchor bolts shall not be allowed. The maximum size anchor shall be 1/2-inch (13 mm) diameter for 6-inch (152 mm) nominal masonry, 3/4-inch (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 (25mm) diameter for 12-inch (304.8 mm) nominal masonry.*

2114~~5~~.5.~~8~~10 Additional requirements for allowable stress design.

21145.810.1 TMS 402/ACI 530/ASCE 5 *Modify by adding Section 8.1.73.8 as follows:*

8.1.73.8 – Walls and piers.

Thickness of walls. *For thickness limitations of walls as specified in this chapter, nominal thickness shall be used. Stresses shall be determined on the basis of the net thickness of the masonry, with consideration for reduction, such as raked joints.*

The thickness of masonry walls shall be designed so that allowable maximum stresses specified in this chapter are not exceeded. Also, no masonry wall shall exceed the height or length-to-thickness ratio or the minimum thickness as specified in this chapter and as set forth in Table 21145.810.1.

Piers. *Every pier or wall section which width is less than three times its thickness shall be designed and constructed as required for columns if such pier is a structural member. Every pier or wall section which width is between three and five times its thickness or less than one half the height of adjacent openings shall have all horizontal steel in the form of ties except that in walls 12 inches (305 mm) or less in thickness such steel may be in the form of hair-pins.*

~~***2114.8.2 TMS 402/ACI 530/ASCE 5, Section 2.1.7.7.1.1, lap splices.***~~ ~~*Modify the requirements of Section 2107.2.1 by adding the following:*~~

~~*Lap splices need not be greater than 72 bar diameters.*~~

(Renumber remaining subsections due to subsection deletion.)

…

TABLE 21145.810.1
MINIMUM THICKNESS OF MASONRY WALLS[1, 2]

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

CHAPTER 21*A*
MASONRY

Adopt Chapter 21 of the 2018 IBC as Chapter 21A of the 2019 CBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter	**X**	**-**	

(All existing California amendments that are not revised below shall continue without change)

…

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. *Structures ~~Applications listed in Section 1.9.2.1,~~ regulated by the Division of the State Architect-Structural Safety (DSA-SS), which include those applications listed in Section 1.9.2.1.These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.*
2. ***(Reserved for OSHPD)***

2101A.1.2 Amendments in this chapter. *DSA-SS 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. *Division of the State Architect-Structural Safety:*

   [DSA-SS] *For applications listed in Section 1.9.2.1.*

2. ***[Reserved for OSHPD]***

2101A.1.3 Prohibition: *The following design methods, systems, and materials are not permitted by DSA:*

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.

…

2101*A*.2 Design methods. Masonry shall comply with the provisions of TMS402,~~TMS 403~~ or TMS 404 as well as applicable requirements of this chapter.

…

SECTION 2102*A*
NOTATIONS

2102A.1 General. The following notations are used in the chapter~~, *except those defined below which shall, for the purposes of this chapter, have the meanings shown herein*~~:

…

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 ~~and AAC masonry units~~ shall comply with Article 2.3 of TMS 602. Architectural cast stone shall conform to ASTM C 1364 and TMS 504. Adhered manufactured stone masonry veneer units shall conform to ASTM C1670.

…

2103A.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 2 inches (51 mm) or more in width as determined in accordance with TMS 602 Table ~~7~~6, footnote 3, and in all grouted cells of hollow unit masonry construction.*

2103A.4 Metal reinforcement and accessories. Metal reinforcement and accessories shall conform to Article 2.4 of TMS 602. Where unidentified reinforcement is approved for use, not less than three tension and three bending tests shall be made on representative specimens of the reinforcement from each shipment and grade of reinforcing steel proposed for use in the work. *Alternatively, the frequency of sampling for unidentifiable reinforcing bars specified in Section 1910A.2 can be used.*

…

SECTION 2104*A*
CONSTRUCTION

2104*A*.1 Masonry construction. Masonry construction shall comply with the requirements of Sections 2104*A*.1.1 through ~~*through 2104A.1.3*~~ 2104*A*.1.3 and with the requirements of either TMS 602 or TMS 604. *Architectural cast stone construction shall be considered as an alternative system.*

…

2104A.1.3 Grouted Masonry.

…

2104A.1.3.1.1 Reinforced grouted multi-wythe masonry.

2104A.1.3.1.1.1 General. *Reinforced grouted masonry is that form of construction made with clay or shale brick or made with solid concrete building brick in which interior joints of masonry are filled by pouring grout around reinforcement therein as the work progresses.*

2104A.1.3.1.1.1.1 Low-lift grouted construction*. Requirements for construction shall be as follows:*

1. *All units in the two outer wythes shall be laid with full-shoved head joint and bed mortar joints. Masonry headers shall not project into the grout space.*
2. *The minimum clear width of grout space for low-lift grout masonry shall be 2 1/2 inches (64 mm). Clear width is defined in TMS 602, Table 6, footnote 3. All reinforcement and wire ties shall be embedded in the grout. The thickness of the grout between masonry units and reinforcement shall be a minimum of one bar diameter.*
3. *…*

2104A.1.3.1.1.1.2 High-lift grouted construction*. Where high-lift grouting is used, the method shall be subject to the approval of the enforcement agency. Requirements for construction shall be as follows:*

1. *All units in the two wythes shall be laid with full head and bed mortar joints.*
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 (51 mm) in length less than the overall wall thickness. Kinks, water drips, or deformations shall not be permitted in the ties. One tier of the wall shall be built up not more than 16 inches (406 mm) ahead of the other tier. 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 bond.

3. *Cleanouts shall be provided for each pour by leaving out every other unit in the bottom tier of the section being poured or by cleanout openings in the foundation. The foundation or other horizontal construction joints shall be cleaned of all loose material and mortar droppings before each pour. The cleanouts shall be sealed after inspection and before grouting.*
4. *The clear width of grout space in high-lift grouted masonry shall be a minimum of 3 1/2 inches (89 mm). Clear width is defined in TMS 602, Table 6, footnote 3. All reinforcement and wire ties shall be embedded in the grout. The thickness of the grout between masonry units and reinforcement shall be a minimum of one bar diameter.*
5. *…*

…

2104A.1.3.1.2 Reinforced hollow-unit masonry.

2104A.1.3.1.2.1 General. *Reinforced hollow-unit masonry is that type of construction made with hollow-masonry units in which cells are continuously filled with grout, and in which reinforcement is embedded. All cells shall be solidly filled with grout in reinforced hollow-unit masonry.*

Exception: *Reinforced hollow-unit masonry laid in running bond used for freestanding site walls or interior nonbearing non-shear wall partitions may be grouted only in cells containing vertical and horizontal reinforcement.*

Construction shall be one of the two following methods: The low-lift method ~~where the maximum height of construction laid before grouting is 4 feet (1220 mm)~~ per Section 2104A.1.3.1.2.2, or the high-lift method ~~where the full height of construction between horizontal cold joints is grouted in one operation~~ per Section 2104A.1.3.1.2.3. General requirements for construction shall be as follows:

1. *Bond shall be provided by lapping units in successive vertical courses. 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.*
2. *Vertical cells to be filled shall have vertical alignment sufficient to maintain a clear grout space dimension of not less than 2 inches by 3 inches (51 mm by 76 mm), except the minimum cell dimension for*

high-lift grout shall be 3 inches (76 mm), as determined in accordance with TMS 602 Table ~~7~~6, ~~footnote 3.~~

…

2104A.1.3.1.2.2 Low-lift grouted construction*. Units shall be laid a maximum of 4 feet (1220 mm) before grouting. Grouting shall follow each 4 feet (1220 mm) of construction laid and shall be consolidated so as to completely fill all voids and embed all reinforcing steel. Horizontal reinforcement shall be fully embedded in grout in an uninterrupted pour.*

Exception: *The 4 feet maximum wall construction may be increased to 5'-4" for 10 inch nominal and larger hollow-unit masonry.*

…

SECTION 2105A
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 17, ~~and~~ TMS 602 *and Sections 2105A.2 through 2105A.4*.

2105*A*.2 Compressive Strength, f'_m. *The specified compressive strength, f'_m, assumed in design shall be 2000 psi (13.79MPa) for all masonry construction using materials and details of construction required herein. Testing of the constructed masonry shall be provided in accordance with Section ~~2105A.4~~ 2105A.5 or Section 2105A.6.*

EXCEPTION: *Subject to the approval of the enforcement agency, higher values of f'_m may be used in the design of reinforced grouted masonry and reinforced hollow-unit masonry. The approval shall be based on prism test results submitted by the architect or engineer which demonstrate the ability of the proposed construction to meet prescribed performance criteria for strength and stiffness. The design shall take into account the mortar joint depth. In no case shall the f'_m assumed in design exceed 3,000 psi (20.7MPa).*

Where an f'_m greater than 2000 psi (13.79MPa) is approved, 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 specifications. Compliance with the requirements for the specified strength of constructed masonry shall be provided using prism test method ~~and core shear testing~~ in accordance with Section 2105A.~~4~~5. Substantiation for the specified compressive strength prior to the start of construction shall be obtained by using prism test method in Section 2105A.5 and Section 2105A.3.

2105A.3 Mortar and grout tests. *These tests are to establish whether the masonry components meet the specified component strengths…*

…

Test specimens for mortar and grout shall be made as set forth in ASTM C 1586 and ASTM C 1019.

> ***Exceptions:***
>
> *1. For non-bearing non-shear masonry walls not exceeding total wall height of 12' feet above ~~wall base~~ top of foundation, mortar test shall be permitted to be limited to those at the beginning of masonry work for each mix design.*
>
> ***[DSA-SS]*** *2. Mortar sampling and testing shall be as follows: At the beginning of all masonry work, mortar test samples shall be taken on three successive working days and at least at one-week intervals thereafter. Where mortar is based on a proportion specification, mortar shall be sampled and tested during construction in accordance with ASTM C780 Annex 4 and 5 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 ~~approved~~ preblended mortars in conformance with ASTM C270 with a valid evaluation report.*

2105A.4 Masonry core testing*. Not less than two cores shall be taken from each building for each 5,000 square feet (465 m^2) of the masonry wall area or fraction thereof. The approved agency shall perform or observe the coring of the masonry walls and sample locations shall be subject to approval of the registered design professional.*

Core samples shall comply with the following:

1. *Cored no sooner than 7 days after grouting of the selected area;*
2. *Be a minimum of 3-3/4" in nominal diameter; and*
3. *Sampled in such a manner as to exclude any masonry unit webs, mortar joint, or reinforcing steel. If all cells contain reinforcement, alternate core locations or means to detect void or delamination shall be selected by the registered design professional and approved by the building official.*

Visual examination of all cores shall be made by an approved agency and the condition of the cores reported as required by the California Administrative Code. Shear test both joints between the grout core and the outside wythes or face shell of the masonry 28 days after grouting of the sample area using a shear test apparatus acceptable to the enforcement agency. Core samples shall not be soaked before testing. Core samples to

be tested shall be stored in sealed plastic bags or non-absorbent containers immediately after coring and for at least 5 days prior to testing. The average unit shear value for each pair of cores (4 shear tests) from each 5,000 square feet of wall area (or less) on the cross section of core shall not be less than 2.5 $\sqrt{f'_m}$ psi.

All cores shall be submitted to an approved agency for examination, even where the core specimens failed during the cutting operation. The approved agency shall report the location where each core was taken, the findings of their visual examination of each core, identify which cores were selected for shear testing, and the results of the shear tests.

Exceptions:

1. *Core sampling and testing is not required for non-bearing non-shear masonry walls, not exceeding total wall height of 12 feet above ~~wall base~~ top of foundation, built with single-wythe hollow unit concrete masonry that attaches opposite face shells using webs cast as single unit, when designed using an f'_m not exceeding 2000 psi (13.79 MPa).*
2. *An infrared thermographic survey or other nondestructive test procedures, shall be permitted to be approved as an alternative system to detect voids or delamination in grouted masonry in-lieu of core sampling and testing.*

***2105A.5 Masonry prism method testing**. Prism test method performed prior to the start or during construction shall be in accordance with TMS 602 Section 1.4 B.3. Prism test method performed on constructed walls shall be in accordance with TMS 602 Section 1.4 B.4.*

***2105A.6 Unit strength method testing**. Unit strength method testing shall be performed in accordance with TMS 602 Section 1.4 B.2.*

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 Modifications to TMS 402 ~~/ ACI 530 / ASCE 5~~.** Modify TMS 402~~/ ACI 530 / ASCE 5~~ Section 7.4.4 as follows:*

***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.*

Exception: *Reinforced hollow-unit masonry used for freestanding site walls or interior non-bearing non-shear wall partitions shall have horizontal reinforcing spaced not more than 4'-0" on center, except as required by TMS 402 Section 7.4.5 when applicable.*

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 equal 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 ~~/ ACI 530 / ASCE 5~~ shall be considered as continuous reinforcement.

…

SECTION 2107A
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 ~~2107*A*.3~~ *2107A.6*.

…

2107*A*.2 TMS 402, Section 6.1.6.1.1, lap splices. As an alternative to Section 6.1.6.1.1, it shall be permitted to design lap splices in accordance with Section 2107*A*.2.1.

2107*A*.2.1 Lap splices. The minimum length of lap splices for reinforcing bars in tension or compression, l_d, shall be

$l_d = 0.002 d_b f_s$ (Equation 21A-1)

For SI: $l_d = 0.29 d_b f_s$

but not less than 12 inches (305 mm). The length of the lapped splice shall not be less than 40 bar diameters*, ~~and need not be greater than 72 bar diameters~~*.

where:

d_b = Diameter of reinforcement, inches (mm).

f_s = Computed stress in reinforcement due to design loads, psi (MPa).

In regions of moment where the design tensile stresses in the reinforcement are greater than 80 percent of the allowable steel tension stress, F_s, the lap length of splices shall be increased not less than 50 percent of the minimum required length, but need not be greater than 72 d_b. Other equivalent means of stress transfer to

accomplish the same 50 percent increase shall be permitted. Where epoxy coated bars are used, lap length shall be increased by 50 percent.

…

2107A.4 *Reserved.*

…

2107A.5 Modify TMS 402 ~~/ ACI 530/ASCE 5~~ by adding Section 8.~~1.7~~3.8 as follows:

8.~~1.7~~3.8 - Walls and Piers.

…

2107A.6 (Reserved for OSHPD)

(All existing amendments that are not revised above shall continue without any change)

SECTION 2108A
STRENGTH DESIGN OF MASONRY

2108A.1 General. The design of masonry structures using strength design shall comply with Section 2106*A* 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.

~~Exception:~~ ~~AAC masonry shall comply with the requirements of Chapters 1 through 7 and Chapter 11 of TMS 402/ACI 530/ASCE 5.~~

…

SECTION 2109A
EMPIRICAL DESIGN OF ADOBE MASONRY

***Not permitted by DSA*.**

(Existing amendment deleting Section 2109 of IBC is retained and deleted Section 2109 is not shown here for clarity)

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

…

CHAPTER 22
STEEL

Adopt Chapter 22 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter as amended (amended sections listed below)	-	X	
2201.1.1		X	
2201.1.2		X	
2201.1.3		X	
2201.1.4		X	
2212		X	

(All existing California amendments that are not revised below shall continue without change)

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. [DSA-SS/CC] *The scope of application of Chapter 22 is as follows:*

1. (Reserved for OSHPD)

2. Structures ~~Community college buildings~~ regulated by the Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC), which include those applications ~~as~~ listed in Section 1.9.2.2.

2201.1.2 ~~Identification of a~~Amendments in this chapter. [DSA-SS/CC] *DSA-SS, DSA-SS/CC adopt this chapter and all amendments.*

Exception: *~~Division of the State Architect-Structural Safety/Community Colleges a~~Amendments adopted by only one agency appear in this chapter preceded with the appropriate acronym of the adopting agency, as follows:*

1. (Reserved for OSHPD)

2. Division of the State Architect - Structural Safety/Community Colleges:

[DSA-SS/CC] *- For ~~community college buildings~~ applications listed in Section 1.9.2.2.*

2201.1.3 Reference to other chapters. [DSA-SS/CC]

Where reference within this chapter is made to sections in Chapter 17 the provisions in Chapter 17A, shall apply instead.

2201.1.4 Amendments. [DSA-SS/CC] *See Section 2212 for additional requirements.*

…

SECTION 2212
ADDITIONAL REQUIREMENTS
FOR COMMUNITY COLLEGES [DSA-SS/CC]

2212.1 Connections.

2212.1.1 Column base plate. *When shear and / or tensile forces are intended to be transferred between column base plates and anchor bolts, provision 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 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.*

2212.2 Modifications to AISC 341.

~~2212.2.1 Section A4.~~ *~~Replace Section A4.1 item (3c) as follows:~~*

~~(3c)~~ *~~Locations and dimensions of protected zones, including provision by the owner or owner's' designated representative for construction to permanently mark and maintain the protection.~~*

2212.2.1 Section B5. *Modify Section B5.2(a) as follows:*

(a) The forces specified in this section need not be applied to the diagonal members of the truss diaphragms and their connections, where *each diagonal bracing member resists no more than 30 percent of the diaphragm shear at each line of resistance and where* these members and connections conform to the

requirements of Sections F2.4a, F2.5a, F2.5b and F2.6c. Braces in K- or V- configurations and braces supporting gravity loads other than self-weight are not permitted under this exception.

~~***2212.2.2 Section D1.*** *Add Section D1.6 as follows:*~~

~~***6. Diaphragm bracing systems.*** *The required strength of diagonal bracing members used as the diaphragm shall be determined from either of the following:*~~

~~*(1) The load effect resulting from the diaphragm analysis per the applicable building code provided the members satisfy all of the following requirements:*~~

~~*1. Diagonal bracing members comply with Section D1.1 for moderately ductile members.*~~

~~*2. Each diagonal bracing member resists no more than 30 percent of the diaphragm shear at each line of resistance.*~~

~~*3. Diagonal bracing members shall not support gravity loads other than self-weight.*~~

~~*4. The slenderness ratio (KL/r) of diagonal bracing members shall not exceed 4$\sqrt{E/Fy}$, except tension-only bracing.*~~

~~*(2) The load effect required for collectors using the load combinations stipulated in the applicable building code.*~~

2212.2.3~~2~~ Section D2. *Modify Section D2.6c(b)~~(ii)~~(2) as follows:*

~~(ii)~~(2) the moment calculated using the load combinations of the applicable building code, including the amplified seismic load, provided the connection or other mechanism within the column base is designed to have the ductility necessary to accommodate the column base rotation resulting from the design story drift.

~~***2212.2.4 Section D2.*** *Add Section D2.9 as follows:*~~

~~***9. Diaphragm bracing systems****. The required strength of the connections of diagonal bracing members used as the diaphragm shall be the load effect required for collectors using the load combinations stipulated in the applicable building code.*~~

~~***2212.2.5 Section F2.*** *Modify Section F2.3 Exception (2)(a) as follows:*~~

~~*(a) The maximum of the forces determined using load combination stipulated by the applicable building code including the amplified seismic load, applied to the building frame model in which all compression braces have been removed and those determined with no compression braces*~~

~~*removed per D1.4a(2).*~~

~~***2212.2.6 Section F1.*** *Add Section F1.4c as follows:*~~

~~***4c. Multi-tiered Braced Frames****: Braced-frames configured with two or more tiers of bracing between diaphragm levels or locations of out-of-plane support shall comply with the additional requirements of section F2.4e.*~~

~~***2212.2.7 Section F2.*** *Modify Section F2.4a by adding the following:*~~

~~*Where each framing bay on a line of resistance does not have opposing diagonal braces within the same column bay, then the collector forces along that line shall be designed considering the redistribution of seismic forces to other bays as a result of the post-buckled redistribution of loads using the analysis requirements of Section F2.3. The collector shall not be designed for a load less than that stipulated by the applicable building code.*~~

~~*The required strength of the collector need not exceed the forces determined using load combination stipulated by the applicable building code including the amplified seismic load, applied to the building model in which all compression braces have been removed.*~~

~~***2212.2.8 Section F2.*** *Add Section F2.4e as follows:*~~

~~***4c. Multi-tiered Braced Frames****: Braced-frames configured with two or more tiers of bracing between diaphragm levels or locations of out-of-plane support shall comply with the additional requirements of this section:*~~

~~*(1) Braces shall be used in symmetrical pairs at every tier level.*~~

~~*(2) Horizontal beams at intermediate tier levels for V- and inverted V-brace configurations shall have out-of-plane strength, stiffness, and beam-to-column connections adequate to resist torsional moments arising from brace buckling when braces are designed to buckle out-of-plane.*~~

~~*(3) Columns shall be restrained against rotation about their longitudinal axis at each intermediate tier level and shall resist out-of-plane bending moments due to second-order effects, geometric imperfections, and out-of-plane brace buckling.*~~

…

2212.5 Cold-formed steel light-frame construction.

2212.5.1 Trusses.

…

2212.5.1.2 Deferred submittals*. ~~AISI S214 Section B4.2 shall not be deleted.~~ Deferred submittal per Section I1.4.2 of AISI 202 is not permitted by DSA-SS.*

…

2212.5.3 Limitations on shear wall assemblies. *Shear wall assemblies in accordance with Sections E5, E6 and E7 ~~C2.2.3~~ of AISI S~~213~~ 400 are not permitted within the seismic force resisting system of buildings or structures assigned to Occupancy Category II, III, IV, or buildings*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 22A
STEEL

Adopt Chapter 22 of the 2018 IBC as Chapter 22A of the 2019 CBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter as amended	**X**	**-**	

(All existing amendments that are not revised below shall continue without any change)

…

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. *Structures regulated by the Division of the State Architect-Structural Safety (DSA-SS), which include those applications listed in Section 1.9.2.1. These applications include public elementary and secondary schools, community colleges and state-*

owned or state-leased essential services buildings.

2. (Reserved for OSHPD)

Exception: *(Reserved for OSHPD)*

2201A.1.2 ~~Identification of a~~Amendments in this chapter. *DSA-SS adopts 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. *Division of the State Architect-Structural Safety:*

[DSA-SS] *For applications listed in Section 1.9.2.1.*

2. *(Reserved for OSHPD)*

…

SECTION 2204*A*
CONNECTIONS

2204*A*.1 Welding. The details of design, workmanship and technique for welding and qualification of welding personnel shall be in accordance with the specifications listed in Sections 2205*A*, 2206*A*, 2207*A*, 2208*A*, 2210*A* and 2211*A*. For *Special inspection* of welding, see Section 1705*A*.2.

…

2204A.4 Column base plate. *When shear and / or tensile forces are intended to be transferred between column base plates and anchor bolts, provision 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 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 2205A
STRUCTURAL STEEL

2205*A*.1 General. The design, fabrication and erection of structural steel elements in buildings, structures and portions thereof shall be in accordance with AISC 360.

Exceptions: (Reserved for OSHPD)

2205*A*.2 Seismic Design. Where required, the seismic design, fabrication and erection of buildings, structures and portions thereof shall be in accordance with Section

2205A.2.1 or 2205A.2.2.

2205*A*.2.1 Structural steel seismic force-resisting system. The design, detailing, fabrication and erection of structural steel seismic force-resisting systems shall be in accordance with the provisions of Section 2205A.2.1.1 or 2205A.2.1.2, as applicable.

2205*A*.2.1.1 Seismic Design Category B or C. *Not permitted by DSA.*. ~~Structures assigned to Seismic Design Category B or C shall be of any construction permitted in Section 2205. Where a response modification coefficient, R, in accordance with ASCE 7, Table 12.2-1 is used for the design of structural steel structures assigned to Seismic Design Category B or C, the structures shall be designed and detailed in accordance with the requirements of AISC 341.~~

~~**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 AISC 360, and need not be designed and detailed in accordance with AISC 341.~~

2205*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.~~

2205*A*.2.2 Structural steel elements. The design, detailing, fabrication and erection of structural steel elements in seismic force-resisting system other than those covered in Section 2205A.2.1, including struts, collectors, chords and foundation elements shall be in accordance with AISC 341.~~, where either of 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 structure assigned to seismic design category B or C.~~

2205A.3 Modifications to AISC 341. [DSA-SS]

~~***2205A.3.1 Section A4.*** *Replace Section A4.1 item (3c) as follows:*~~

~~***(3c)*** *Locations and dimensions of protected zones, including provision by the owner or owner's' designated representative for construction to permanently mark and maintain the protection.*~~

2205A.3.1 Section B5. *Modify Section B5.2(a) as follows:*

(a) The forces specified in this section need not be applied to the diagonal members of the truss diaphragms and their connections, where *each diagonal bracing member resists no more than 30 percent of the diaphragm shear at each line of resistance and where* these members and connections conform to the requirements of Sections F2.4a, F2.5a, F2.5b and F2.6c. Braces in K- or V- configurations and braces supporting gravity loads other than self-weight are not permitted under this exception.

2205A.3.2 Section D1. *Add Section D1.6 as follows:*

6. Diaphragm bracing systems. *The required strength of diagonal bracing members used as the diaphragm shall be determined from either of the following:*

(1) The load effect resulting from the diaphragm analysis per the applicable building code provided the members satisfy all of the following requirements:

1. Diagonal bracing members comply with Section D1.1 for moderately ductile members.

2. Each diagonal bracing member resists no more than 30 percent of the diaphragm shear at each line of resistance.

3. Diagonal bracing members shall not support gravity loads other than self-weight.

4. The slenderness ratio (KL/r) of diagonal bracing members shall not exceed $4\sqrt{E/Fy}$*, except tension-only bracing.*

(2) The load effect required for collectors using the load combinations stipulated in the applicable building code.

2205A.3.32 Section D2. *Modify Section D2.6c(b)(ii)(2) as follows:*

(ii)(2) the moment calculated using the load combinations of the applicable building code, including the amplified seismic load, provided the connection or other mechanism within the column base is designed to have the ductility necessary to accommodate the column base rotation resulting from the design story drift.

2205A.3.4 Section D2. *Add Section D2.9 as follows:*

9. Diaphragm bracing systems*. The required strength of the connections of diagonal bracing members used as the diaphragm shall be the load effect required for collectors using the load combinations stipulated in the applicable building code.*

2205A.3.5 Section F1. *Add Section F1.4c as follows:*

4c. Multi-tiered Braced Frames*: Braced-frames configured with two or more tiers of bracing between diaphragm levels or locations of out-of-plane support shall comply with the additional requirements of section F2.4e.*

2205A.3.6 Section F2. *Modify Section F2.3 Exception (2)(a) as follows:*

(a) The maximum of the forces determined using load combination stipulated by the applicable building code including the amplified seismic load, applied to the building frame model in which all compression braces have been removed and those determined with no compression braces removed per D1.4a(2).

2205A.3.7 Section F2. *Modify Section F2.4a by adding the following:*

Where each framing bay on a line of resistance does not have opposing diagonal braces within the same column bay, then the collector forces along that line shall be designed considering the redistribution of seismic forces to other bays as a result of the post-buckled redistribution of loads using the analysis requirements of Section F2.3. The collector shall not be designed for a load less than that stipulated by the applicable building code.

The required strength of the collector need not exceed the forces determined using load combination stipulated by the applicable building code including the amplified seismic load, applied to the building model in which all compression braces have been removed.

2205A.3.8 Section F2. *Add Section F2.4e as follows:*

4c. Multi-tiered Braced Frames*: Braced-frames configured with two or more tiers of bracing between diaphragm levels or locations of out-of-plane support shall comply with the additional requirements of this section:*

(1) Braces shall be used in symmetrical pairs at every tier level.

(2) Horizontal beams at intermediate tier levels for V- and inverted V-brace configurations shall have out-of-plane strength, stiffness, and beam-to-column connections adequate to resist torsional moments arising from brace buckling when braces are designed to buckle out-of-plane.

(3) Columns shall be restrained against rotation about their longitudinal axis at each intermediate tier level and shall resist out-of-plane bending moments due to second-order effects, geometric imperfections, and out-of-plane brace buckling.

2205A.4 MODIFICATIONS TO AISC 341. [Reserved for OSHPD]

2205A.5 MODIFICATIONS TO AISC 358. [Reserved for OSHPD]

…

SECTION 2207A
STEEL JOISTS

…

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:

…

~~Steel joist placement plans do not require the seal and signature of the joist manufacturer's registered design professional.~~

…

SECTION 2209A
STEEL STORAGE RACKS

2209A.1 Storage racks.

The design, testing and utilization of storage racks made of cold-formed or hot-rolled steel structural members shall be in accordance with RMI/ ANSI /MH 16.1. Where required by ASCE 7, the seismic design of storage racks shall be in accordance with Section 15.5.3 of ASCE 7.

2209*A*.2 Cantilevered steel storage racks.

The design, testing, and utilization of cantilevered storage racks made of cold-formed or hot-rolled steel structural members shall be in accordance with RMI ANSI/MH 16.3. Where required by ASCE 7, the seismic design of cantilevered steel storage racks shall be in accordance with Section 15.5.3 of ASCE 7.

SECTION 2210*A*
COLD-FORMED STEEL

2210*A*.1 General. The design of cold-formed carbon and low alloy steel structural members shall be in accordance with AISI S100. The design of cold-formed stainless-steel structural members shall be in accordance with ASCE 8. Cold formed steel light-frame construction shall also comply with Section 2211*A*. Where required, the seismic

design of cold formed steel structures shall be in accordance with the additional provisions of Section 2210*A*.2.

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.

2210*A*.2 Seismic requirements for cold-formed steel structures. Where a response modification coefficient, *R*, in accordance with ASCE 7, Table 12.2-1 is used for the design of cold-formed steel structures, the structures shall be designed and detailed in accordance with the requirements of AISI S100~~,~~ *and* ~~*ASCE 8.*~~ ~~, or, for cold-formed steel special-bolted moment frames,~~ AISI S400.

SECTION 2211*A*
COLD-FORMED STEEL LIGHT-FRAME CONSTRUCTION

2211A.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 2211A.1.1 through 2211A.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.

2211A.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 2211A.1.1.1 or 2211A.1.1.2, as applicable.

~~**2211A.1.1.1 Seismic Design Categories B and C.** 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.~~

2211A.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. *The following additional requirements apply:*

1. (Relocated from 2211*A*.4) *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. (Relocated from 2211*A*.6) *Shear wall assemblies in accordance with Sections E5, E6 and E7 ~~C2.2.3~~ of AISI S~~213~~ 400 are not permitted within the seismic force-resisting system of buildings.*

2211*A*.1.2 (Formerly 2211*A*.7) Prescriptive framing. *Not Permitted by DSA* ~~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.~~

2211*A*.1.3 (Formerly 2211*A*.3) Truss design. Cold-formed steel trusses shall comply with the additional provisions of Sections 2211*A*.1.3.1 through 2211*A*.1.3.3.

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.

2211*A*.1.3.1 (Formerly 2211*A*.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. *Deferred submittal per Section I1.4.2 is not permitted by DSA-SS.*

2211*A*.1.3.2 (Formerly 2211A.3.3) 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*A*.2.

2211*A*.1.3.3 (Formerly 2211A.3.4) 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*A*.2.5 and 1705*A*.2, as applicable.

2211*A*.2 Nonstructural members. For cold-formed steel light-frame construction, the design and installation of non-structural members and connections shall be in accordance with AISI S220 *for non-composite assembly design. Where non-structural members do not qualify for design under AISI S220, the design and installation of non-structural members and connections shall be in accordance with AISI S240 or S100.*

…

SECTION 2213A
TESTING AND FIELD VERIFICATION

2213A.1 Tests of High-strength Bolts, Nuts and Washers*. High-strength bolts, nuts and washers shall be sampled and tested by an approved ~~independent testing laboratory~~ agency for conformance with the requirements of applicable ASTM standards.*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

…

CHAPTER 23
WOOD

Adopt Chapter 23 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter as amended (amended sections listed below)	**X**	**X**	
2301.1.1	**X**	**X**	
2301.1.2	**X**	**X**	
2301.1.3	**X**	**X**	
2301.1.3.1	**X**	**-**	

2301.1.3.2	**-**	**X**	
2301.1.4	**X**	**X**	
2303.1.3.1	**X**	**X**	
2303.1.4.1	**X**	**X**	
2303.4.1.4.1, Exception 3	**X**	**X**	
2303.4.3.1	**X**	**X**	
2304.3.4	**X**	**X**	
2304.4.1	**X**	**X**	
2304.10.1.1	**X**	**-**	
2304.12.1.2 , Exception	**X**	**-**	
2304.12.1.4.1	**X**	**-**	
2305.1.2	**X**	**X**	
2308.2.7	**X**	**X**	
2309.1.1	**X**	**X**	

(All existing California amendments that are not revised below shall continue without change)

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. [DSA-SS, DSA-SS/CC] *The scope of application of Chapter 23 is as follows:*

1. *Structures ~~Applications listed in Sections 1.9.2.1 and 1.9.2.2,~~ regulated by the Division of the State Architect-Structural Safety, which include those applications listed in Section 1.9.2.1 (DSA-SS), and 1.9.2.2 (DSA-SS/CC). These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.*

2. (Reserved for OSHPD)

2301.1.2 ~~Identification of a~~Amendments in this chapter. [DSA-SS & DSA-SS/CC] *~~Amendments appear in this chapter preceded with the appropriate acronym, as follows:~~ DSA-SS , DSA-SS/CC 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. Division of the State Architect - Structural Safety:

[DSA-SS] *- For applications listed in Section 1.9.2.1.*

[DSA-SS/CC] *- For applications listed in Section 1.9.2.2.*

2. (Reserved for OSHPD)

2301.1.3 Reference to other chapters.

2301.1.3.1 [DSA-SS] *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.*

2301.1.3.2 [DSA-SS/CC] *Where reference within this chapter is made to sections in Chapters 17 and 18, the provisions in Chapters 17A and 18A respectively shall apply instead.*

2301.1.3.3 *(Reserved for OSHPD)*

…

SECTION 2304
GENERAL CONSTRUCTION REQUIREMENTS

…

2304.3 Wall framing. The framing of exterior and interior walls shall be in accordance with the provisions specified in Section 2308 unless a specific design is furnished.

…

2304.3.4 Additional requirements. [DSA-SS, DSA-SS/CC] *The following additional requirements apply:*

1. *Engineering analysis shall be furnished that demonstrates compliance of wall framing elements and connections with Section 230~~1~~2.~~2~~1, Item 1 or 2.*

…

2304.4 Floor and roof framing. The framing of wood-joisted floors and wood framed

roofs shall be in accordance with the provisions specified in Section 2308 unless a specific design is furnished.

2304.4.1 Additional requirements. [DSA-SS, DSA-SS/CC] *The following additional requirements apply:*

1. *Engineering analysis shall be furnished that demonstrates compliance of floor, roof and ceiling framing elements and connections with Section 230~~1~~2.~~2~~21, Items 1 or 2.*

…

2304.12 Protection against decay and termites. Wood shall be protected from decay and termites in accordance with the applicable provisions of Sections 2304.12.1 through 2304.12.7.

…

2304.12.1.4 Sleepers and sills. Sleepers and sills on a concrete or masonry slab that is in direct contact with earth shall be of naturally durable or preservative-treated wood.

2304.12.1.4.1 Additional Requirements. [DSA-SS] *Stud walls or partitions at shower or toilet rooms with more than two plumbing fixtures, excluding floor drains, and stud walls adjacent to unroofed paved areas shall rest on a concrete curb extending at least 6 inches (152 mm) above finished floor ~~or~~ and pavement level.*

…

2304.12.2.5 Supporting members for permeable floors and roofs. Wood structural members that support moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, shall be of naturally durable or preservative-treated wood unless separated from such floors or roofs by an impervious moisture barrier. The impervious moisture barrier system protecting the structure supporting floors shall provide positive drainage of water that infiltrates the moisture-permeable floor topping. ~~***[DSA-SS, DSA-SS/CC]*** *The impervious moisture barrier system protecting the structure supporting floors shall provide positive drainage of water that infiltrates the moisture-permeable floor topping.~~

2304.12.2.6 Ventilation required beneath balcony or elevated walking surfaces. Enclosed framing in exterior balconies and elevated walking surfaces that are exposed to rain, snow, or drainage from irrigation shall be provided with openings that provide a net free cross ventilation area not less than 1/150 of the area of each separate space.

~~***2304.12.2.6 Ventilation required beneath balcony or elevated walking surfaces.***~~

~~[DSA-SS, DSA-SS/CC]~~ Enclosed framing in exterior balconies and elevated walking surfaces that are exposed to rain, snow, or drainage from irrigation shall be provided with openings that provide a net free cross ventilation area not less than 1/150 of the area of each separate space.

…

SECTION 2308
CONVENTIONAL LIGHT-FRAME CONSTRUCTION

…

2308.2.7 Additional requirements [DSA-SS & DSA-SS/CC] *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 (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 (Floor framing), engineering analysis shall be furnished that demonstrates compliance of floor framing elements and connections with Section 230~~1~~2.~~2~~1, Item 1 or 2.*
4. *In addition to the use of provisions in Section 2308.5 (Wall construction), engineering analysis shall be furnished that demonstrates compliance of wall framing elements and connections with Section 230~~1~~2.~~2~~1, Item 1 or 2.*
5. *In addition to the use of provisions in Section 2308.7 (Roof and Ceiling Framing), engineering analysis shall be furnished demonstrating compliance of roof and ceiling framing elements and connections with Section 230~~1~~2.~~2~~1, Item 1 or 2.*

…

SECTION 2309
WOOD FRAME CONSTRUCTION MANUAL

2309.1 Wood Frame Construction Manual. Structural design in accordance with AWC WFCM shall be permitted for buildings assigned to Risk Category I or II subject to the limitations of Section 1.1.3 of the AWC WFCM and the load assumption contained therein. Structural elements beyond these limitations shall be designed in accordance with accepted engineering practice.

2309.1.1 Additional requirements [DSA-SS & DSA-SS/CC] *The use of the AWC WFCM is permitted provided the design and construction also comply with Sections 2304, 2305, and 230~~1~~2.~~2~~1, Item 1 or 2 and engineering analysis is furnished demonstrating compliance.*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 24
GLASS AND GLAZING

Adopt Chapter 24 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter as amended (amended sections listed below)	***X***	**X**	
2401.1.1	*X*	X	
2401.1.2	*X*	X	
2403.2.1	*X*	X	
Table 2403.2.1	*X*	X	
2410	*X*	X	

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.

2401.1.1 Application. [DSA-SS, DSA-SS/CC] *The scope of application of Chapter*

24 is as follows:

1. (Reserved for OSHPD)

2. Applications listed in Sections 1.9.2.1 and 1.9.2.2, regulated by the Division of the State Architect-Structural Safety (DSA-SS, and DSA-SS/CC). These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.

2401.1.2 Amendments in this chapter. [DSA-SS, DSA-SS/CC] *DSA-SS, DSA-SS/CC 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 OSHPD)

2. Division of the State Architect - Structural Safety:

[DSA-SS] *- For applications listed in Section 1.9.2.1.*

[DSA-SS/CC] *- For applications listed in Section 1.9.2.2.*

…

SECTION 2410 [DSA-SS, DSA-SS/CC]
STRUCTURAL SEALANT GLAZING (SSG)

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.

2410.1.1 Design. *Design of Structural Sealant Glazing (SSG) shall satisfy the following requirements:*

…

2410.1.2 Testing and inspection. *Testing and inspection of Structural Sealant Glazing (SSG) shall satisfy the following requirements:*

a. The seismic drift capability of SSGstructural sealant glazing shall be determined by tests in accordance with AAMA 501.6, AAMA 501.4 and ASCE 7 Section 13.5.9.2.

…

2410.1.4 Construction Documents. *Complete design of the SSG system for gravity, wind, and seismic forces shall be subject to review by the enforcement*

agency. Construction documents shall show structural details of glass and curtain wall system including:

1. *A design narrative explaining how the SSG is supported by the building and the mechanism used to accommodate seismic racking.*
2. *Type of SSG and whether field or shop built.*
3. *The means of supporting the glass during structural sealant curing time ~~shall be shown in the construction documents~~.*
4. *Typical curtain wall panel elevation, plan view, and sections.*
5. *Details of building corner joint to verify how the corner vertical mullion will move to accommodate the seismic drift.*
6. *Joints between panel and floors at top and bottom.*
7. *Joints between panels, including vertical & horizontal stack joints at intermediate and edge mullion.*
8. *Member sizes for curtain wall panels.*
9. *Glass pane sizes, thickness and type of glass.*
10. *Contact width and thickness of structural sealant and sealant materials for shop and field installation/re-glazing.*
11. *Glass to aluminum joints (including primers, if any).*
12. *Maximum roof/floor dead and live load deflection of the roof/floor framing members supporting the exterior curtain wall system.*
13. *Required seismic separation or gap distance between the SSG~~structural sealant glazing~~ curtain wall and other adjacent cladding units.*
14. *Mitigation of galvanic reactions between the roof/floor slab anchors, steel screw connections of aluminum sections and the aluminum anchorage components, if any.*

SECTION 2411 *(Reserved for OSHPD*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.

Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 25
GYPSUM BOARD, GYPSUM PANEL PRODUCTS AND PLASTER

Adopt Chapter 24 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall continue without change.

Adopting Agency	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter as amended (amended sections listed below)	**X**	**X**	
2501.1.1	X	X	
2501.1.2	X	X	
2503.2	X	X	
2504.2	X	X	
2504.2.1	X	X	
2505.3	X	X	
2507.3	X	X	
2508.~~5~~6.6	X	X	
2514.1 Exception	X	-	

SECTION 2501
GENERAL

2501.1 Scope. Provisions of this chapter shall govern the materials, design, construction and quality of gypsum board, gypsum panel products, lath, gypsum plaster, cement plaster and reinforced gypsum concrete.

2501.1.1 Application. [DSA-SS, DSA-SS/CC] *The scope of application of Chapter 25 is as follows:*

1. (Reserved for OSHPD)

2. Structures regulated by the Division of the State Architect—Structural Safety,

which include those applications listed in Section 1.9.2.1 (DSA-SS), and 1.9.2.2 (DSA-SS/CC). These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings

2501.1.2 Amendments in this chapter. [DSA-SS, DSA-SS/CC] *DSA-SS, DSA-SS/CC 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 OSHPD)

2. Division of the State Architect - Structural Safety:

[DSA-SS] *- For applications listed in Section 1.9.2.1.*

[DSA-SS/CC] *- For applications listed in Section 1.9.2.2.*

…

SECTION 2508

GYPSUM CONSTRUCTION
2508.1 General.

…

2508.6~~5~~.6 Diaphragm ceiling connection to partitions. [DSA-SS, DSA-SS/CC] *Gypsum board shall not be used in diaphragm ceilings to resist lateral forces imposed by partitions. Connection of diaphragm ceiling to the vertical lateral force resisting elements shall be designed and detailed to transfer lateral forces.*

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 26
PLASTIC

Adopt Chapter 26 of the 2018 IBC as amended below. All existing California

amendments that are not revised below shall continue without change.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter as amended (amended sections listed below)	**X**	**X**	
2601.1.1	*X*	*X*	
2601.1.2	*X*	*X*	
2603.11.1	*X*	*X*	
2603.12.3	*X*	*X*	
2603.13.3	*X*	*X*	

…

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. See Chapter 14 for requirements for exterior wall finish and trim.

2601.1.1 Application. [DSA-SS, DSA-SS/CC] *The scope of application of Chapter 26 is as follows:*

1. (Reserved for OSHPD)

2. Structures regulated by the Division of the State Architect—Structural Safety, which include those applications listed in Section 1.9.2.1 (DSA-SS), and 1.9.2.2 (DSA-SS/CC). These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings

2601.1.2 Amendments in this chapter. [DSA-SS, DSA-SS/CC] *DSA-SS, DSA-SS/CC 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 OSHPD)

2. Division of the State Architect - Structural Safety:

[DSA-SS] *- For applications listed in Section 1.9.2.1.*

[DSA-SS/CC] *- For applications listed in Section 1.9.2.2.*

…

SECTION 2603
FOAM PLASTIC INSULATION

…

2603.13 Cladding attachment over foam sheathing to wood framing. Cladding shall be specified and installed in accordance with Chapter 14…

…

2603.13.3 Additional requirements. [DSA-SS, DSA-SS/CC] *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.*

…

(*All existing amendments that are not revised above shall continue without any change)*

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 30
ELEVATORS AND CONVEYING SYSTEMS

Adopt Chapter 30 of the 2018 IBC without amendment.

Adopting Agency	**DSA-SS**	**DSA-SS/CC**	Comments
Adopt entire chapter	**X**	**X**	

…

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and H&S Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 31
SPECIAL CONSTRUCTION

Adopt Chapter 31 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall continue without change.

PROPOSED ADOPTION	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	~~X~~	~~X~~	
Adopt entire chapter as amended (amended sections listed below)	**X**	**X**	
3109.1	*X*	*X*	
3111.1.1, Exception	*X*	*X*	
3111.3	*X*	*X*	
3112.3, Exception	*X*	*X*	
3113.1	*X*	*X*	
3113.1.1	*X*	*X*	
3113.2, Exception	*X*	*X*	
3113.3, Exception	*X*	*X*	
3113.4, Exception	*X*	*X*	

…

SECTION 3109
SWIMMING POOLS, SPAS AND HOT TUBS

3109.1 General. The design and construction of swimming pools, spas and hot tobs shall comply with International Swimming Pool and Spa Code. *[DSA-SS and DSA-*

SS/CC] Swimming pools utilized for public school purposes shall also be designed, constructed and inspected in accordance with this code.

…

SECTION 3111
SOLAR ENERGY SYSTEMS

3111.1 General.

Solar energy systems shall comply with the requirements of this section.

3111.1.1 Wind Resistance. Rooftop-mounted photovoltaic panels and modules and solar thermal collectors shall be designed in accordance with Section 1609.

[DSA-SS and DSA-SS/CC] Exception: Rooftop-mounted photovoltaic panels and modules and solar thermal collectors shall be designed in accordance with Section 1510.7 of this code.

…

3111.3 Photovoltaic solar energy systems. Photovoltaic solar energy systems shall be designed and installed in accordance with this section, the *International Fire Code*, NFPA 70 and the manufacturer's installation instructions *[DSA-SS and DSA-SS/CC], and Section 1512 of this code*.

…

SECTION 3112
GREENHOUSES

…

3112.1 General. The provisions of this section shall apply to greenhouses that are designed and used for the cultivation, maintenance, or protection of plants.

…

3112.3 Structural design. Greenhouses shall comply with the structural design requirements for greenhouses in Chapter 16.

[DSA-SS and DSA-SS/CC] Exception: Greenhouses considered to be school buildings shall comply with the structural design requirements in Chapter 16A and in accordance with Part 1, California Administrative Code, Title 24, C.C.R.

…

SECTION 3113
RELOCATABLE BUILDINGS

3113.1 General. The provisions of this section shall apply to relocatable buildings. Relocatable buildings manufactured after the effective date of this code shall comply with the applicable provisions of this code *[DSA-SS and DSA-SS/CC] as enforced by the enforcement agency*.

3113.1.1 Compliance. A newly constructed relocatable building shall comply with the requirements of this code for new construction *[DSA-SS and DSA-SS/CC] as enforced by the enforcement agency*. An existing relocatable building that is undergoing alteration, addition, change of occupancy or relocation shall comply with Chapter 14 of the *International Existing Building Code*

[DSA-SS and DSA-SS/CC] Exception: An existing relocatable public school building that is undergoing alteration, addition or change of occupancy shall comply with Chapter 3 of the California Existing Building Code.

3113.2 Supplemental information. Supplemental information specific to a relocatable building shall be submitted to the authority having jurisdiction. It shall, as a minimum, include the following in addition to the information required by Section 105:

[DSA-SS and DSA-SS/CC] Exception: Supplemental information specific to a relocatable building shall be submitted to the enforcement agency. It shall, as a minimum, include the following in addition to the information required by Section 1603A:

1. Manufacturer's name and address.
2. Date of manufacture.
3. Serial number of module.
4. Manufacturer's design drawings.
5. Type of construction in accordance with Section 602.
6. Design loads including: roof live load, roof snow load, floor live load, wind load and seismic site class, use group and design category.
7. Additional building planning and structural design data.
8. Site-built structure or appurtenance attached to the relocatable building.

3113.3 Manufacturer's data plate. Each relocatable module shall have a data plate that is permanently attached on or adjacent to the electrical panel, and shall include the following information:

1. Occupancy group.
2. Manufacturer's name and address.
3. Date of manufacture.
4. Serial number of module.

5. Design roof live load, design floor live load, snow load, wind and seismic design.

6. *Approved* quality assurance agency or *approved* inspection agency.

7. Codes and standards of construction.

8. Envelope thermal resistance values.

9. Electrical service size.

10. Fuel-burning equipment and size.

11. Special limitations if any.

[DSA-SS and DSA-SS/CC] Exception: Each relocatable module shall have two metal identification labels permanently attached to the structure as enforced by the enforcement agency.

3113.4 Inspection agencies. The building official is authorized to accept reports of inspections conducted by *approved* inspection agencies during off-site construction of the relocatable building, and to satisfy the applicable requirements of Sections 110.3 through 110.3.11.1.

[DSA-SS and DSA-SS/CC] Exception: Each relocatable module shall be inspected during construction and installation at the project site by project inspectors acceptable to the enforcement agency in accordance with Part 1, California Administrative Code, Title 24, C.C.R.

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 32
ENCROACHMENTS INTO THE PUBLIC RIGHT-OF-WAY

Adopt Chapter 32 of the 2018 IBC without amendment.

PROPOSED ADOPTION	DSA-SS	DSA-SS/CC	Comments

Adopt entire chapter	**X**	**X**	

…

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 33
SAFEGUARDS DURING CONSTRUCTION

Adopt Chapter 33 of the 2018 IBC without amendment.

PROPOSED ADOPTION	DSA-SS	DSA-SS/CC	Comments
Adopt entire chapter	**X**	**X**	

…

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]
Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.

…

CHAPTER 35
REFERENCED STANDARDS

Adopt Chapter 35 of the 2018 IBC as amended below. All existing California amendments that are not revised below shall continue without change.

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 Section 102.4.

[DSA-SS, DSA-SS/-CC] 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.*

…

AAMA	American Architectural Manufacturing Association 1827 Waldon Office Square, Suite 550 Schaumburg, IL 60173	
Standard reference number	Title	Referenced in code section number
. . .		
501.6–09	***Recommended Dynamic Test Method For Determining The Seismic Drift Causing Glass Fallout From a Wall System***	*2410.1*
TIR A8-16	***Structural Performance of Composite Thermal Barrier Framing Systems***	*2411.1*
ACI	American Concrete Institute 38800 Country Club Drive Farmington Hills, MI 48331	
Standard reference number	Title	Referenced in code section number
. . .		
355.2–07	***Qualification of Post-Installed Mechanical Anchors in Concrete and~~&~~***	*1617~~6~~A.1.19*

	Commentary	
355.4–11	***Qualification of Post-Installed Adhesive Anchors in Concrete and Commentary***	*1617A.1.19*
. . .		
506R–16	***Guide to Shotcrete***	*1908A.1, 1908A.3, 1908A.12, 1911A.2*
530–13	**Building Code Requirements for Masonry Structures**	*2114.7, 2114.8, 2107A.5, 2107A.6*
530.1–13	**Specifications for Masonry Structures**	
AISC	American Institute of Steel 130 East Randolph Street, Suite 2000 Chicago, IL 60601-6219	
Standard reference number	Title	Referenced in code section number
341–16	**Seismic Provisions for Structural Steel Buildings**	*…1705A.2.1, 1705A.2.5, 1707.2.2, 1708.3, 2212.2, 2205A, 2206A*
358–16	***Prequalified Connections for Special and Intermediate Steel Moment Frames for Seismic Applications including Supplements No. 1 & 2***	*1705A.2.1, 2212.3, 2205A, 2206A.2*
360–16	**Specification for Structural Steel Buildings**	*…1705A.2.1, Table 1705A.2.1, 1705A.2.5, 2212.1.1, 2204A.4, 2212A.1.2, 2212A.2.1*
AISI	American Iron and Steel Institute 25 Massachusetts Avenue, NW Suite	

	800 Washington. DC 20001	
Standard reference number	Title	Referenced in code section number
AISI S100–16*12*	**North American Specification for the Design of Cold-formed Steel Structural Members, 2016*2***	*…1905A.1, 1913.3.8, 2210A.2,* *2211A.21*, *2212A.1.2*
~~AISI S110–07/S1-09 (2012)~~	**~~Standard for Seismic Design of Cold-formed Steel Structural Systems–Special Moment Frames, 2007 with Supplement 1, dated 2009 (Reaffirmed 2012)~~**	*~~2210.2~~*
~~S214–12~~	**~~North American Standard for Cold-formed Steel Framing-Truss Design, 2012~~**	~~2211.3.1, 2211.3.2, 2212.5.1.2, *2211A.3*~~

…		
ANSI	American National Standards Institute 25 West 43rd Street, Fourth Floor New York, NY 10036	
Standard reference number	Title	Referenced in code section number
…		
~~A190.1–*12*~~	**~~Structural Glued Laminated Timber~~**	*~~1705A.5.4~~*…
…		
APA	APA - Engineered Wood Association 7011 South 19th Street	

	Tacoma, WA 98466	
ANSI 117–15 (Moved from WCLIB)	**Standard Specification for Structural Glued Laminated Timber of Softwood Species**	*2303.1.3.1,* 2306.1
ANSI/APA A190.1–17	**Structural Glued Laminated Timber**	*1705A.5.4…*
…		
ASCE/SEI	American Society of Civil Engineers Structural Engineering Institute 1801 Alexander Bell Drive Reston, VA 20191-4400	
Standard reference number	Title	Referenced in code section number
~~**5–13**~~	~~**Building Code Requirements for Masonry Structures**~~	*…~~2114.7, 2114.8, 2107A.5, 2107A.6~~*
…		
7–16	**Minimum Design Loads and Associated Criteria for Buildings and Other Structures *with Supplement No. 1***	*…104.11, Table 1504.8, 1510.7.1,…1617~~6~~.2, 1617~~6~~.9, 1617~~6~~.10, 1603A.2, 1604A.4, 1613A, 1617~~6~~A, 1803A.6, 2212A.1.1, 2212A.2.4, 2410.1.1, 2410.1.2~~, 3419.7.2~~*
…		
19–16*~~10~~*	**Structural Applications of Steel Cables for Buildings**	~~*2208A.1*~~
24–14*~~14~~*	**Flood Resistant Design and Construction**	~~1612A.4, 1612A.5,~~…

…		
41–17~~3~~	***Seismic Evaluation and Retrofit of Existing Buildings***	*1603A.2, 161~~7~~6A.1.30, 1617A.1.34, ~~3401.5,~~…~~3417.5, 3417.8, 3418.1, 3419.1, 3419.2, 3419.5, 3419.7.2, 3419.8, 3420.1, 3421.2.2, 3406A,~~*
49–*12*	**Wind Tunnel Testing for Buildings and Other Structures**	*…~~1609A.1.1~~*
…		
ASTM	ASTM International 100 Barr Harbor Drive, P.O. Box C700 West Conshohocken, PA 19428-2959	
Standard reference number	Title	Referenced in code section number
…		
A153/A153M–*16 a~~09~~*	**Specification for Zinc Coating (Hot-dip) on Iron and Steel Hardware**	*…2304.10.1.1*
…		
A1064–17~~3~~	***Standard Specification for Carbon-Steel Wire and Welded Wire Reinforcement, Plain and Deformed, for Concrete***	*1903A.8*
…		
B695–04(*2016~~20 09~~*)	**Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel Strip for Building**	*…2304.10.1.1*

	Construction	
…		
C90–14	**Specification for Loadbearing Concrete Masonry Units**	*…~~2105A.2~~*
…		
C94/C94M–*17~~4a~~*	**Specification for Ready-Mixed Concrete**	*…1705A.3.3.1*
~~C114–10~~	***~~Standard Test Methods for Chemical Analysis of Hydraulic Cement~~***	*~~1903A.6, 1913.2.3~~*
~~…~~		
~~C144-04~~	***~~Standard Specification for Aggregate for Masonry Mortar~~***	*~~2103A.8~~*
C150/C150M–15	**Specification for Portland Cement**	*…1909.2.3~~4~~, 1910A.1*
…		
C270–14a~~14a~~	**Specification for Mortar for Unit Masonry**	*…2105A.3, 2115.6.1*
…		
C595/C595M–*17* ~~14e1~~	**Specification for Blended Hydraulic Cements**	*…1909.2.3~~4~~, 19~~10~~9A.1*
C618–17~~2a~~	***Standard Specification for Coal Fly Ash and Raw or Calcined Natural Pozzolan for Use in Concrete***	*1909.2.3~~4~~, 1910A.1*
…		
C635/C635M–*17* ~~13a~~	**Specification for the Manufacture, Performance and Testing of Metal Suspension Systems for Acoustical Tile and Lay-in Panel ceilings**	*…1617~~6~~.10.16, 1617~~6~~A.1.21*
C636/C636M–*17*	**Practice for Installation of Metal**	*…1617~~6~~.10.16,*

~~3~~	**Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels**	*1617~~6~~A.1.21*
…		
C989/C989M–17 ~~3~~	***Standard Specification for Slag Cement for Use in Concrete and Mortars***	*1909.2.3~~4~~, 1910A.1*
…		
~~C1019~~C1019–16 ~~3~~	***Test Method for Sampling and Testing Grout~~Test Method of Sampling and Testing Grout***	*2115~~4~~.6.1, 2105A.3*
…		
C1157/C1157M–17 ~~1~~	**Standard Performance Specification for Hydraulic Cement**	*…1909.2.3~~4~~, 1910A.1,…*
…		
C1249–06a(2010)	***Standard Guide for Secondary Seal for Sealed Insulated Glass Units for Structural Sealant Glazing Applications***	*2410.1.1*
…		
C1392–00(2014)	***Standard Guide for Evaluating Failure of Structural Sealant Glazing***	*2410.1.2, 2410.1.3*
…		
D1586–11	***Standard Test Method for Standard ~~for~~ Penetration Test (SPT) and Split-~~b~~Barrel Sampling of Soils***	*1813A.2*
…		
D3966–07(2013)	***Standard Test Method for Deep Foundations~~Piles~~ Under Lateral Loads~~~~***	*1810A.3.3.2*

…		
D5778–12	***Standard Test Method for Electronic Friction Cone and Piezocone Penetration Testing of Soils***	*1813A.2*
…		
E580/E580M–17~~4~~	***Standard Practice for Installation of Ceiling Suspension Systems for Acoustical Tile and Lay-in Panels in Areas Subject to Earthquake Ground Motions***	*~~1615.10.13, 1615A.1.16,~~ 1617~~6~~.10.16, 1617~~6~~A.1.21*
…		
E648–15e1*~~E648–04~~*	**Standard Test Method for Critical Radiant Flux of Floor-Covering Systems Using a Radiant Heat Energy Source*~~Standard Test Method for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source~~***	*…804.4.1, 804.4.2*
E662–17a~~09~~	***Standard Test Method for Specific Optical Density of Smoke Generated by Solid Materials***	*804.4.1, 804.4.2*
…		
F606/F606M–16~~4~~	***Standard Test Methods for Determining the Mechanical Properties of Externally and Internally Threaded Fasteners, Washers, Direct Tension Indicators, and Rivets***	*2213A.1*
…		

AWC	American Wood Council 222 Catoctin Circle SE, Suite 201 Leesburg, VA 20175	

Standard reference number	Title	Referenced in code section number
…		
ANSI/AWC NDS–2018	**National Design Specification (NDS) for Wood Construction–with 2018 NDS Supplement**	*…~~1905A.1.8~~*

…		
AWPA	American Wood Protection Association P.O. Box 361784 Birmingham. AL 35236-1784	
…		
U1–16	**USE CATEGORY SYSTEM: User Specification for Treated Wood Except ~~Section 6,~~ Commodity Specification H**	*1812A.2*
AWS	American Welding Society 8669 NW 36th Street, #130 Miami, FL 33166	
Standard reference number	Title	Referenced in code section number
D1.1/D1.1M–15~~0~~	***Structural Welding Code–Steel***	*Table 1705A.2.1, 1705A.2.5, 2212.6.2, 2213A.2*
D1.2/D1.2M–15	***Structural Welding Code–Aluminum***	*2003.1*
D1.3/D1.3M–08	***Structural Welding Code–Sheet Steel***	*Table 1705A.2.1, 1705A.2.5*

D1.4/D1.4M–201<u>7</u>~~1~~	**Structural Welding Code–Reinforcing Steel Including Metal Inserts and Connections in Reinforced Concrete Construction**	*…Table 1705A.2.1, <u>1903A.8</u>*
D1.8/<u>D1.8M</u>–<u>201</u>~~609~~	***Structural Welding Code–Seismic Supplement***	*~~1704A.3.1.4,~~ <u>Table 1705A.2.1,</u> 1705A.2.5, ~~2204A.1.1, 2204A.1.3, 2211.1~~*
QC1–<u>2016</u>~~07~~	***~~Standard~~<u>Specification</u> for AWS Certification of Welding Inspectors***	*~~1704A.3.1.4,~~ 1705A.2.5*
…		
FM	FM Approvals Headquarters Office 1151 Boston-Providence Turnpike P.O. Box 9120 Norwood, MA 02062	
Standard reference number	Title	Referenced in code section number
…		
FM 1950–<u>2016</u>	***American National Standard for Seismic Sway Braces for Pipe, Tubing and Conduit***	*1705A.13.2*
…		
ICC	International Code Council, Inc. 500 New Jersey Ave NW 6th Floor Washington, DC 20001	
Standard reference	Title	Referenced in code

number		section number
…		
ICC-ES AC 01—18~~5~~*	***Acceptance Criteria for Expansion Anchors in Masonry Elements***	*161~~7~~6A.1.19*
ICC-ES AC 58—18~~5~~*	***Acceptance Criteria for Adhesive Anchors in Masonry Elements***	*161~~7~~6A.1.19*
ICC-ES AC 70—18~~5~~*	***Acceptance Criteria for Fasteners Power-Driven into Concrete, Steel and Masonry Elements***	*161~~7~~6A.1.20*
ICC-ES AC 106—18~~5~~*	***Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry***	*161~~7~~6A.1.19*
ICC-ES AC 125—18~~5~~*	***Acceptance Criteria for Concrete~~,~~ and Reinforced and Unreinforced Masonry Strengthening Using Externally Bonded Fiber-Reinforced Polymer (FRP) Composite Systems.***	*1911A.3*
ICC-ES AC 156—18~~5~~*	***Acceptance Criteria for Seismic Certification by Shake-Table Testing of Nonstructural Components***	*1705A.13.3*
ICC-ES AC 178—18~~5~~*	***Acceptance Criteria for Inspection and Verification of Concrete~~,~~ and Reinforced and Unreinforced Masonry Strengthening Using Fiber-Reinforced Polymer (FRP) Composite Systems.***	*1911A.3*
ICC-ES AC 193—18~~5~~*	***Acceptance Criteria for Mechanical Anchors in Concrete Elements***	*161~~7~~6A.1.19…*
ICC-ES AC 232—18~~5~~*	***Acceptance Criteria for Anchor Channels in Concrete Elements***	*161~~7~~6A.1.19…*
ICC-ES AC 308—18~~5~~*	***Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements***	*161~~7~~6A.1.19…*

ICC-ES AC 358—18~~5~~*	***Acceptance Criteria for Helical Foundation Systems and Devices***	*1810A.3.1.5.1*
…		
ICC-ES AC 446—18~~5~~*	***Acceptance Criteria for Headed Cast-in Specialty Inserts in Concrete***	*1617~~6~~A.1.19, 1901.3.2*
…		

** Refers to International Building Code, 2018~~5~~ as a reference standard.*

…

ISO	International Organization for Standardization Chemin de Blandonnet 8 CP 401 1214 Vernier Geneva, Switzerland	
Standard reference number	Title	Referenced in code section number
…		
ISO/IEC 17020—12	***Conformity Assessment - Requirements for the Operation of Various Types of Bodies Performing Inspection***	*1704A.2*
ISO/IEC 17025—17~~05~~*	***General Requirements for Competence of Testing and Calibration Laboratories***	*1703A.4*
…		
PCI	Precast Prestressed Concrete Institute 200 West Adams Street, Suite 2100	

	Chicago, IL 60606-6938	
Standard reference number	Title	Referenced in code section number
~~PCI~~ MNL-120~~–17~~0	***PCI Design Handbook, ~~7~~8th Edition***	*1905A.1.1, 1905A.1.2*
…		
PTI	Post-Tensioning Institute 38800 Country Club Drive Farmington Hills, MI 48331	
Standard reference number	Title	Referenced in code section number
…		
PTI DC35.1–14~~–2004~~	***Recommendations for Prestressed Rock and Soil Anchors ~~(~~4th ~~Edition)~~***	*…1811A.2, 1812A.4, 1812A.5~~, 1813A.2~~*
…		
TMS	The Masonry Society 105 South Sunset Street, Suite Q Longmont, CO 80501	
Standard reference number	Title	Referenced in code section number
…		
402–2016	**Building Code for Masonry Structures**	*1411.2.1, 2114.7, 2114.8, 2106A.1.1, 2107A.5, 2107A.6, 2115~~4~~.7, 2115~~4~~.8,*

602–2016	**Specification for Masonry Structures**	…*2103A.3.1, 2104A.1.3.1.2.1, 2105A.3*
…		
***UBC*~~UBC~~**	*International Code Council, Inc.* *500 New Jersey Avenue, NW 6th Floor* *Washington, DC 20001*	
Standard reference number	Title	Referenced in code section number
…		
WCLIB	West Coast Lumber Inspection Bureau P. O. Box 23145 Portland, OR 97281	
Standard reference number	Title	Referenced in code section number
…		
…		
~~**AITC 117–10**~~ (Moved to APA)	~~**Standard Specifications for Structural Glued Laminated Timber of Softwood Species**~~	~~*2303.1.3.1*~~
…		

…

(All existing amendments that are not revised above shall continue without any change)

Notation for [DSA-SS]
Authority: Education Code § 17310 and 81142, and Health and Safety Code §16022.
Reference: Education Code §§ 17280 through 17317, and 81130 through 81147, and Health and Safety Code §§16000 through 16023.

Notation for [DSA-SS/CC]

Authority: Education Code § 81053.
Reference: Education Code §§ 81052, 81053, and 81130 through 81147.