REVISION RECORD FOR THE STATE OF CALIFORNIA

SUPPLEMENT

July 1, 2012

2010 Title 24, Part 2, Vol. 2 California Building Code

PLEASE NOTE: The date of this errata is for identification purposes only.
See the History Note Appendix.

It is suggested that the section number, as well as the page number be checked when inserting this material and removing the superseded material. In case of doubt, rely on the section numbers rather than the page numbers because the section numbers must run consecutively.

It is further suggested that the superseded material be retained with this revision record sheet so that the prior wording of any section can be easily ascertained.

Please keep the removed pages with this revision page for future reference.

Note

Due to the fact that the application date for a building permit establishes the California Building Standards Code provisions that are effective at the local level, which apply to the plans, specifications, and construction for that permit, it is strongly recommended that the removed pages be retained for historical reference.

Part 2, Vol. 2

Remove Existing Pages	Insert Blue-Colored Pages
1 and 2	1 and 2
5 and 6	5 and 6
79 through 82	79 through 82
117 through 120	117 through 120
125 and 126	125 and 126
173 and 174	173 and 174
177 and 178	177 and 178
305 and 306	305 and 306
329 and 330	329 and 330
433 and 434	433 and 434
453 through 462	453 through 462
465 and 466	465 and 466
589 through 592	589 through 592
597 and 598	597 and 598
623 and 624	623 and 624
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637 and 638	637 and 638.2
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769 and 770	769 and 770

Item No. 5520S1203

CALIFORNIA BUILDING CODE-MATRIX ADOPTION TABLE
CHAPTER 16 – STRUCTURAL DESIGN

Adopting agency	BSC	SFM	HCD			DSA			OSHPD				CSA	DPH	AGR	DWR	CEC	CA	SL	SLC
			1	2	1-AC	AC	SS	SS/CC	1	2	3	4								
Adopt entire chapter											**X**									
Adopt entire chapter as amended (amended sections listed below)	**X**		**X**	**X**				**X**		**X**										
Adopt only those sections that are listed below					**X**	**X**													**X**	
Chapter/Section																				
1601.1.1								X												
1601.1.2								X												
1601.1.3								X												
1601.1.4								X												
1601.2								X		X										
1602.1										X										
1603.1										X										
1607.1, Table 1607.1										X										
1607.7			X	X	X															
1607.7.2			X	X	X	X														
1612.3										X										
1613.1										X										
1613.1.1																			X	
1613.1.2	X																			
1613.3.1	X																			
1613.5.1										X										
1613.5.6										X										
1613.5.6.1										X										
1613.5.6.2										X										
1613.6.3	X																			
1613.6.9	X																			
1615.1.1								X												
1615.1.2								X												
1615.1.3								X												
1615.2.1.1								X												
1615.2.1.2								X												
1615.2.1.3								X												
1615.3.1								X												
1615.4								X												
1615.5.1.1								X												
1615.5.1.2								X												
1615.5.1.3								X												
1615.5.1.4								X												
1615.5.1.5								X												
1615.5.1.6								X												

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CALIFORNIA BUILDING CODE-MATRIX ADOPTION TABLE
CHAPTER 16 – STRUCTURAL DESIGN—continued

Adopting agency	BSC	SFM	HCD			DSA			OSHPD				CSA	DPH	AGR	DWR	CEC	CA	SL	SLC
			1	2	1-AC	AC	SS	SS/CC	1	2	3	4								
Adopt entire chapter											**X**									
Adopt entire chapter as amended (amended sections listed below)	**X**		**X**	**X**				**X**		**X**										
Adopt only those sections that are listed below					**X**	**X**													**X**	
Chapter/Section																				
1615.5.2								X												
1615.6								X												
1615.7.1								X												
1615.7.2								X												
1615.8								X												
1615.9.1								X												
1615.9.2 - Active Earthquake Fault								X												
1615.9.2 - Base								X												
1615.9.2 - Distance for an Active Earthquake Fault								X												
1615.9.2 - Irregular Structure								X												
1615.9.2 - Next Generation Attenuation (NGA)								X												
1615.9.2 - Structural Elements								X												
1615.9.3								X												
1615.9.4								X												
1615.9.4.1								X												
1615.9.4.2								X												
1615.9.5								X												
1615.9.6								X												
1615.10								X												
1615.10.1								X												
1615.10.2								X												
1615.10.3								X												
1615.10.4								X												
1615.10.5								X												
1615.10.6								X												
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1615.10.8								X												
1615.10.9								X												
1615.10.10								X												
1615.10.11								X												
1615.10.12								X												
1615.10.13								X												
1615.10.14								X												
1615.10.15								X												

(continued)

CHAPTER 16
STRUCTURAL DESIGN

SECTION 1601
GENERAL

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

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

Community college buildings regulated by the Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC), as listed in Section 1.9.2.2.

1601.1.2 Identification of amendments. [DSA-SS/CC] *Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC) amendments appear in this chapter preceded with the appropriate acronym, as follows:*

Division of the State Architect-Structural Safety/Community Colleges: ***[DSA-SS/CC]*** *- For community college buildings listed in Section 1.9.2.2.*

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] *See Section 1615 for additional requirements.*

>> ***1601.2 Enforcement agency approval. [DSA-SS/CC, OSHPD 2]*** *In addition to requirements of CCR Title 24, Parts 1 & 2, any aspect of project design, construction, quality assurance or quality control programs for which this code requires approval by the design professional, are also subject to approval by the enforcement agency.*

SECTION 1602
DEFINITIONS AND NOTATIONS

1602.1 Definitions. The following words and terms shall, for the purposes of this chapter, have the meanings shown herein.

ALLOWABLE STRESS DESIGN. A method of proportioning structural members, such that elastically computed stresses produced in the members by *nominal loads* do not exceed specified allowable stresses (also called "working stress design").

DEAD LOADS. The weight of materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, stairways, built-in partitions, finishes, cladding and other similarly incorporated architectural and structural items, and the weight of fixed service equipment, such as cranes, plumbing stacks and risers, electrical feeders, heating, ventilating and air-conditioning systems and automatic sprinkler systems.

DESIGN STRENGTH. The product of the nominal strength and a resistance factor (or strength reduction factor).

DIAPHRAGM. A horizontal or sloped system acting to transmit lateral forces to the vertical-resisting elements. When the term "diaphragm" is used, it shall include horizontal bracing systems.

Diaphragm, blocked. In light-frame construction, a diaphragm in which all sheathing edges not occurring on a framing member are supported on and fastened to blocking.

Diaphragm boundary. In light-frame construction, a location where shear is transferred into or out of the diaphragm sheathing. Transfer is either to a boundary element or to another force-resisting element.

Diaphragm chord. A diaphragm boundary element perpendicular to the applied load that is assumed to take axial stresses due to the diaphragm moment.

Diaphragm flexible. A diaphragm is flexible for the purpose of distribution of story shear and torsional moment where so indicated in Section 12.3.1 of ASCE 7, as modified in Section 1613.6.1.

Diaphragm, rigid. A diaphragm is rigid for the purpose of distribution of story shear and torsional moment when the lateral deformation of the diaphragm is less than or equal to two times the average story drift.

DURATION OF LOAD. The period of continuous application of a given load, or the aggregate of periods of intermittent applications of the same load.

ENFORCEMENT AGENT. [OSHPD 2] *That individual within the agency or organization charged with responsibility for agency or organization compliance with the requirements of this code. Used interchangeably with "Building Official" or "Code Official."*

ESSENTIAL FACILITIES. Buildings and other structures that are intended to remain operational in the event of extreme environmental loading from flood, wind, snow or earthquakes.

FABRIC PARTITION. A partition consisting of a finished surface made of fabric, without a continuous rigid backing, that is directly attached to a framing system in which the vertical framing members are spaced greater than 4 feet (1219 mm) on center.

FACTORED LOAD. The product of a nominal load and a load factor.

GUARD. See Section 1002.1.

IMPACT LOAD. The load resulting from moving machinery, elevators, craneways, vehicles and other similar forces and kinetic loads, pressure and possible surcharge from fixed or moving loads.

LIMIT STATE. A condition beyond which a structure or member becomes unfit for service and is judged to be no longer useful for its intended function (serviceability limit state) or to be unsafe (strength limit state).

LIVE LOADS. Those loads produced by the use and occupancy of the building or other structure and do not include construction or environmental loads such as wind load, snow load, rain load, earthquake load, flood load or dead load.

LIVE LOADS (ROOF). Those loads produced (1) during maintenance by workers, equipment and materials; and (2) during the life of the structure by movable objects such as planters and by people.

LOAD AND RESISTANCE FACTOR DESIGN (LRFD). A method of proportioning structural members and their connections using load and resistance factors such that no applicable limit state is reached when the structure is subjected to appropriate load combinations. The term "LRFD" is used in the design of steel and wood structures.

LOAD EFFECTS. Forces and deformations produced in structural members by the applied loads.

LOAD FACTOR. A factor that accounts for deviations of the actual load from the *nominal load*, for uncertainties in the analysis that transforms the load into a load effect, and for the probability that more than one extreme load will occur simultaneously.

LOADS. Forces or other actions that result from the weight of building materials, occupants and their possessions, environmental effects, differential movement and restrained dimensional changes. Permanent loads are those loads in which variations over time are rare or of small magnitude, such as dead loads. All other loads are variable loads (see also "*Nominal loads*").

NOMINAL LOADS. The magnitudes of the loads specified in this chapter (dead, live, soil, wind, snow, rain, flood and earthquake).

OCCUPANCY CATEGORY. A category used to determine structural requirements based on occupancy.

OTHER STRUCTURES. Structures, other than buildings, for which loads are specified in this chapter.

PANEL (PART OF A STRUCTURE). The section of a floor, wall or roof comprised between the supporting frame of two adjacent rows of columns and girders or column bands of floor or roof construction.

RESISTANCE FACTOR. A factor that accounts for deviations of the actual strength from the nominal strength and the manner and consequences of failure (also called "strength reduction factor").

STRENGTH, NOMINAL. The capacity of a structure or member to resist the effects of loads, as determined by computations using specified material strengths and dimensions and equations derived from accepted principles of structural mechanics or by field tests or laboratory tests of scaled models, allowing for modeling effects and differences between laboratory and field conditions.

STRENGTH, REQUIRED. Strength of a member, cross section or connection required to resist factored loads or related internal moments and forces in such combinations as stipulated by these provisions.

STRENGTH DESIGN. A method of proportioning structural members such that the computed forces produced in the members by factored loads do not exceed the member design strength [also called "*load and resistance factor design*" (LRFD)]. The term "strength design" is used in the design of concrete and masonry structural elements.

VEHICLE BARRIER SYSTEM. A system of building components near open sides of a garage floor or ramp or building walls that act as restraints for vehicles.

NOTATIONS.

D = Dead load.

E = Combined effect of horizontal and vertical earthquake induced forces as defined in Section 12.4.2 of ASCE 7.

F = Load due to fluids with well-defined pressures and maximum heights.

F_a = Flood load in accordance with Chapter 5 of ASCE 7.

H = Load due to lateral earth pressures, ground water pressure or pressure of bulk materials.

L = Live load, except roof live load, including any permitted live load reduction.

L_r = Roof live load including any permitted live load reduction.

R = Rain load.

S = Snow load.

T = Self-straining force arising from contraction or expansion resulting from temperature change, shrinkage, moisture change, creep in component materials, movement due to differential settlement or combinations thereof.

W = Load due to wind pressure.

SECTION 1603
CONSTRUCTION DOCUMENTS

1603.1 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 1603.1.1 through 1603.1.9 shall be indicated on the *construction documents*.

Exception: *Construction documents* for buildings constructed in accordance with the *conventional light-frame construction* provisions of Section 2308 shall indicate the following structural design information:

1. Floor and roof live loads.
2. Ground snow load, P_g.

CHAPTER 16*A*
STRUCTURAL DESIGN

SECTION 1601*A* GENERAL

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

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

1. *Applications listed in Section 1.9.2.1, regulated by the Division of the State Architect-Structural Safety (DSA-SS). These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.*
2. *Applications listed in Sections 1.10.1 and 1.10.4, regulated by the Office of Statewide Health Planning and Development (OSHPD). These applications include hospitals, skilled nursing facilities, intermediate care facilities, and correctional treatment centers.*

   Exception: [OSHPD 2] *Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light-steel-frame construction as defined in Health and Safety Code Section 129725, which shall comply with Chapter 16 and any applicable amendments therein.*

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

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

1. *Division of the State Architect-Structural Safety:*

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

2. *Office of Statewide Health Planning and Development:*

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

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

1601A.2 Enforcement agency approval. *In addition to the requirements of California Code of Regulations (C.C.R.) Title 24, Parts 1 and 2, any aspect of project design, construction, quality assurance or quality control programs for which this code requires approval by the design professional are also subject to approval by the enforcement agency.*

SECTION 1602*A* DEFINITIONS AND NOTATIONS

1602*A*.1 Definitions. The following words and terms shall, for the purposes of this chapter, have the meanings shown herein.

ALLOWABLE STRESS DESIGN. A method of proportioning structural members, such that elastically computed stresses produced in the members by *nominal loads* do not exceed specified allowable stresses (also called "working stress design").

ALTERNATIVE SYSTEM. [OSHPD 1 & 4] *Alternative materials, design and methods of construction in accordance with Section 104.11, Section 11.1.4 of ASCE 7 or structural design criteria as approved by the enforcement agency.*

DEAD LOADS. The weight of materials of construction incorporated into the building, including but not limited to walls, floors, roofs, ceilings, stairways, built-in partitions, finishes, cladding and other similarly incorporated architectural and structural items, and the weight of fixed service equipment, such as cranes, plumbing stacks and risers, electrical feeders, heating, ventilating and air-conditioning systems and automatic sprinkler systems.

DESIGN STRENGTH. The product of the nominal strength and a resistance factor (or strength reduction factor).

DIAPHRAGM. A horizontal or sloped system acting to transmit lateral forces to the vertical-resisting elements. When the term "diaphragm" is used, it shall include horizontal bracing systems.

Diaphragm, blocked. In light-frame construction, a diaphragm in which all sheathing edges not occurring on a framing member are supported on and fastened to blocking.

Diaphragm boundary. In light-frame construction, a location where shear is transferred into or out of the diaphragm sheathing. Transfer is either to a boundary element or to another force-resisting element.

Diaphragm chord. A diaphragm boundary element perpendicular to the applied load that is assumed to take axial stresses due to the diaphragm moment.

Diaphragm flexible. A diaphragm is flexible for the purpose of distribution of story shear and torsional moment where so indicated in Section 12.3.1 of ASCE 7, as modified in Section 1613*A*.6.1.

Diaphragm, rigid. A diaphragm is rigid for the purpose of distribution of story shear and torsional moment when the lateral deformation of the diaphragm is less than or equal to two times the average story drift.

DURATION OF LOAD. The period of continuous application of a given load, or the aggregate of periods of intermittent applications of the same load.

ENFORCEMENT AGENT. *That individual within the agency or organization charged with responsibility for agency or organization compliance with the requirements of this code. Used interchangeably with "Building Official" and "Code Official."*

ESSENTIAL FACILITIES. Buildings and other structures that are intended to remain operational in the event of extreme environmental loading from flood, wind, snow or earthquakes.

FABRIC PARTITION. A partition consisting of a finished surface made of fabric, without a continuous rigid backing, that is directly attached to a framing system in which the vertical framing members are spaced greater than 4 feet (1219 mm) on center.

FACTORED LOAD. The product of a nominal load and a load factor.

GUARD. See Section 1002.1.

HOSPITAL BUILDING. *Any building defined in Section 129725, Health and Safety Code.*

IMPACT LOAD. The load resulting from moving machinery, elevators, craneways, vehicles and other similar forces and kinetic loads, pressure and possible surcharge from fixed or moving loads.

LIMIT STATE. A condition beyond which a structure or member becomes unfit for service and is judged to be no longer useful for its intended function (serviceability limit state) or to be unsafe (strength limit state).

LIVE LOADS. Those loads produced by the use and occupancy of the building or other structure and do not include construction or environmental loads such as wind load, snow load, rain load, earthquake load, flood load or dead load.

LIVE LOADS (ROOF). Those loads produced (1) during maintenance by workers, equipment and materials; and (2) during the life of the structure by movable objects such as planters and by people.

LOAD AND RESISTANCE FACTOR DESIGN (LRFD). A method of proportioning structural members and their connections using load and resistance factors such that no applicable limit state is reached when the structure is subjected to appropriate load combinations. The term "LRFD" is used in the design of steel and wood structures.

LOAD EFFECTS. Forces and deformations produced in structural members by the applied loads.

LOAD FACTOR. A factor that accounts for deviations of the actual load from the *nominal load*, for uncertainties in the analysis that transforms the load into a load effect, and for the probability that more than one extreme load will occur simultaneously.

LOADS. Forces or other actions that result from the weight of building materials, occupants and their possessions, environmental effects, differential movement and restrained dimensional changes. Permanent loads are those loads in which variations over time are rare or of small magnitude, such as dead loads. All other loads are variable loads (see also "*Nominal loads*").

NOMINAL LOADS. The magnitudes of the loads specified in this chapter (dead, live, soil, wind, snow, rain, flood and earthquake).

OCCUPANCY CATEGORY. A category used to determine structural requirements based on occupancy.

OTHER STRUCTURES. Structures, other than buildings, for which loads are specified in this chapter.

PANEL (PART OF A STRUCTURE). The section of a floor, wall or roof comprised between the supporting frame of two adjacent rows of columns and girders or column bands of floor or roof construction.

RESISTANCE FACTOR. A factor that accounts for deviations of the actual strength from the nominal strength and the manner and consequences of failure (also called "strength reduction factor").

STRENGTH, NOMINAL. The capacity of a structure or member to resist the effects of loads, as determined by computations using specified material strengths and dimensions and equations derived from accepted principles of structural mechanics or by field tests or laboratory tests of scaled models, allowing for modeling effects and differences between laboratory and field conditions.

STRENGTH, REQUIRED. Strength of a member, cross section or connection required to resist factored loads or related internal moments and forces in such combinations as stipulated by these provisions.

STRENGTH DESIGN. A method of proportioning structural members such that the computed forces produced in the members by factored loads do not exceed the member design strength [also called "*load and resistance factor design*" (LRFD)]. The term "strength design" is used in the design of concrete and masonry structural elements.

VEHICLE BARRIER SYSTEM. A system of building components near open sides of a garage floor or ramp or building walls that act as restraints for vehicles.

NOTATIONS.

D = Dead load.

E = Combined effect of horizontal and vertical earthquake induced forces as defined in Section 12.4.2 of ASCE 7.

F = Load due to fluids with well-defined pressures and maximum heights.

F_a = Flood load in accordance with Chapter 5 of ASCE 7.

H = Load due to lateral earth pressures, ground water pressure or pressure of bulk materials.

L = Live load, except roof live load, including any permitted live load reduction.

L_r = Roof live load including any permitted live load reduction.

R = Rain load.

S = Snow load.

T = Self-straining force arising from contraction or expansion resulting from temperature change, shrinkage, moisture change, creep in component materials, movement due to differential settlement or combinations thereof.

W = Load due to wind pressure.

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*A*.1.9 shall be indicated on the *construction documents*.

Exception: *Construction documents* for buildings constructed in accordance with the *conventional light-frame construction* provisions of Section 2308 shall indicate the following structural design information:

1. Floor and roof live loads.
2. Ground snow load, P_g.
3. Basic wind speed (3-second gust), miles per hour (mph) (km/hr) and wind exposure.
4. *Seismic design category* and *site class*.
5. Flood design data, if located in *flood hazard areas* established in Section 1612*A*.3.
6. Design load-bearing values of soils.

[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).*

[OSHPD 1] *Additional requirements are included in Section 7-115 and 7-125 of the California Administrative Code (Part 1, Title 24, C.C.R).*

1603*A*.1.1 Floor live load. The uniformly distributed, concentrated and impact floor live load used in the design shall be indicated for floor areas. Use of live load reduction in accordance with Section 1607*A*.9 shall be indicated for each type of live load used in the design.

1603*A*.1.2 Roof live load. The roof live load used in the design shall be indicated for roof areas (Section 1607*A*.11).

1603*A*.1.3 Roof snow load. The ground snow load, P_g, shall be indicated. In areas where the ground snow load, P_g, exceeds 10 pounds per square foot (psf) (0.479 kN/m^2), the following additional information shall also be provided, regardless of whether snow loads govern the design of the roof:

1. Flat-roof snow load, P_f.
2. Snow exposure factor, C_e.
3. Snow load importance factor, *I*.
4. Thermal factor, C_t.

1603*A*.1.4 Wind design data. The following information related to wind loads shall be shown, regardless of whether wind loads govern the design of the lateral-force-resisting system of the building:

1. Basic wind speed (3-second gust), miles per hour (km/hr).
2. Wind importance factor, *I*, and *occupancy category*.
3. Wind exposure. Where more than one wind exposure is utilized, the wind exposure and applicable wind direction shall be indicated.
4. The applicable internal pressure coefficient.
5. Components and cladding. The design wind pressures in terms of psf (kN/m^2) to be used for the design of exterior component and cladding materials not specifically designed by the *registered design professional*.

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 building:

1. Seismic importance factor, *I*, and *occupancy category*.
2. Mapped spectral response accelerations, S_S and S_1.
3. *Site class*.
4. Spectral response coefficients, S_{DS} and S_{D1}.
5. *Seismic design category*.
6. Basic seismic-force-resisting system(s).
7. Design base shear.
8. Seismic response coefficient(s), C_S.
9. Response modification factor(s), *R*.
10. Analysis procedure used.
11. *Applicable horizontal structural irregularities.*
12. *Applicable vertical structural irregularities.*
13. *Location of base as defined in Section 1613A.2.*
14. *Analysis procedure used.*

1603A.1.5.1 Connections. *Connections that resist design seismic forces shall be designed and detailed on the design drawings.*

1603*A*.1.6 Geotechnical information. The design load-bearing values of soils shall be shown on the *construction documents*.

1603*A*.1.7 Flood design data. For buildings located in whole or in part in *flood hazard areas* as established in Section 1612*A*.3, the documentation pertaining to design, if required in Section 1612*A*.5, shall be included and the following information, referenced to the datum on the community's Flood Insurance Rate Map (FIRM), shall be shown, regardless of whether flood loads govern the design of the building:

1. In *flood hazard areas* not subject to high-velocity wave action, the elevation of the proposed lowest floor, including the basement.
2. In *flood hazard areas* not subject to high-velocity wave action, the elevation to which any nonresidential building will be dry floodproofed.
3. In *flood hazard areas* subject to high-velocity wave action, the proposed elevation of the bottom of the lowest horizontal structural member of the lowest floor, including the basement.

1603*A*.1.8 Special loads. Special loads that are applicable to the design of the building, structure or portions thereof shall be indicated along with the specified section of this code that addresses the special loading condition.

1603*A*.1.9 Systems and components requiring special inspections for seismic resistance. *Construction docu-*

ments or specifications shall be prepared for those systems and components requiring *special inspection* for seismic resistance as specified in Section 1707.1 by the *registered design professional* responsible for their design and shall be submitted for approval in accordance with Section 107.1. Reference to seismic standards in lieu of detailed drawings is acceptable.

1603A.1.10 Construction procedures. *Where unusual erection or construction procedures are considered essential by the project structural engineer or architect in order to accomplish the intent of the design or influence the design, such procedure shall be indicated on the construction documents.*

SECTION 1604*A*
GENERAL DESIGN REQUIREMENTS

1604*A*.1 General. Building, structures and parts thereof shall be designed and constructed in accordance with strength design, *load and resistance factor design*, *allowable stress design*, empirical design or conventional construction methods, as permitted by the applicable material chapters.

1604*A*.2 Strength. Buildings and other structures, and parts thereof, shall be designed and constructed to support safely the factored loads in load combinations defined in this code without exceeding the appropriate strength limit states for the materials of construction. Alternatively, buildings and other structures, and parts thereof, shall be designed and constructed to support safely the *nominal loads* in load combinations defined in this code without exceeding the appropriate specified allowable stresses for the materials of construction.

Loads and forces for occupancies or uses not covered in this chapter shall be subject to the approval of the *building official*.

1604*A*.3 Serviceability. Structural systems and members thereof shall be designed to have adequate stiffness to limit deflections and lateral drift. See Section 12.12.1 of ASCE 7 for drift limits applicable to earthquake loading.

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 *1604A.3.6* or that permitted by Table 1604*A*.3.

1604*A*.3.2 Reinforced concrete. The deflection of reinforced concrete structural members shall not exceed that permitted by ACI 318.

1604*A*.3.3 Steel. The deflection of steel structural members shall not exceed that permitted by AISC 360, AISI S100, ASCE 3, ASCE 8, SJI CJ-1.0, SJI JG-1.1, SJI K-1.1 or SJI LH/DLH-1.1, as applicable.

1604*A*.3.4 Masonry. The deflection of masonry structural members shall not exceed that permitted by TMS 402/ACI 530/ASCE 5.

1604*A*.3.5 Aluminum. The deflection of aluminum structural members shall not exceed that permitted by AA ADM1.

1604*A*.3.6 Limits. Deflection of structural members over span, *l*, shall not exceed that permitted by Table 1604*A*.3.

1604A.3.7 Horizontal diaphragms. *The maximum span-width ratio for any roof or floor diaphragm shall not exceed those given in Table 4.2.4 of AF & PA SDPWS or ICC-ES AC 43 unless test data and design calculations acceptable to the enforcement agency are submitted and approved for the use of other span-width ratios. Concrete diaphragm shall not exceed span-width ratios for equivalent composite floor diaphragm in ICC-ES AC 43.*

1604A.3.8 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.*

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

CONSTRUCTION	*L*	*S* or *W*[f]	*D* + *L*[d, g]
Roof members:[e]			
Supporting plaster ceiling	*l*/360	*l*/360	*l*/240
Supporting nonplaster ceiling	*l*/240	*l*/240	*l*/180
Not supporting ceiling	*l*/180	*l*/180	*l*/120
Floor members	*l*/360	—	*l*/240
Exterior walls and interior partitions:			
With brittle finishes	—	*l*/240	—
With flexible finishes	—	*l*/120	—
Veneered walls, anchored veneers and adhered veneers over 1 inch (25 mm) thick, including the mortar backing		*Section 1405.10*	
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. Interior partitions not exceeding 6 feet in height and 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*.13.

c. See Section 2403 for glass supports.

d. For wood structural members having a moisture content of less than 16 percent at time of installation and used under dry conditions, the deflection resulting from $L + 0.5D$ is permitted to be substituted for the deflection resulting from $L + D$.

e. The above deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to assure adequate drainage shall be investigated for ponding. See Section 1611A for rain and ponding requirements and Section 1503.4 for roof drainage requirements.

f. The wind load is permitted to be taken as 0.7 times the "component and cladding" loads for the purpose of determining deflection limits herein.

g. For steel structural members, the dead load shall be taken as zero.

h. For aluminum structural members or aluminum panels used in skylights and sloped glazing framing, roofs or walls of sunroom additions or patio covers, not supporting edge of glass or aluminum sandwich panels, the total load deflection shall not exceed *l*/60. For continuous aluminum structural members supporting edge of glass, the total load deflection shall not exceed *l*/175 for each glass lite or *l*/60 for the entire length of the member, whichever is more stringent. For aluminum sandwich panels used in roofs or walls of sunroom additions or patio covers, the total load deflection shall not exceed *l*/120.

i. For cantilever members, *l* shall be taken as twice the length of the cantilever.

SECTION 1614*A*
STRUCTURAL INTEGRITY

> **1614*A*.1 General.** Buildings classified as high-rise buildings and assigned to *Occupancy Category* III or IV shall comply with the requirements of this section. Frame structures shall comply with the requirements of Section 1614*A*.3. Bearing wall structures shall comply with the requirements of Section 1614*A*.4.

1614*A*.2 Definitions. The following words and terms shall, for the purposes of Section 1614A, have the meanings shown herein.

BEARING WALL STRUCTURE. A building or other structure in which vertical loads from floors and roofs are primarily supported by walls.

FRAME STRUCTURE. A building or other structure in which vertical loads from floors and roofs are primarily supported by columns.

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

1614*A*.3 Frame structures. Frame structures shall comply with the requirements of this section.

1614*A*.3.1 Concrete frame structures. Frame structures constructed primarily of reinforced or prestressed concrete, either cast-in-place or precast, or a combination of these, shall conform to the requirements of ACI 318 Sections 7.13, 13.3.8.5, 13.3.8.6, 16.5, 18.12.6, 18.12.7 and 18.12.8 as applicable. Where ACI 318 requires that nonprestressed reinforcing or prestressing steel pass through the region bounded by the longitudinal column reinforcement, that reinforcing or prestressing steel shall have a minimum nominal tensile strength equal to two-thirds of the required one-way vertical strength of the connection of the floor or roof system to the column in each direction of beam or slab reinforcement passing through the column.

Exception: Where concrete slabs with continuous reinforcing having an area not less than 0.0015 times the concrete area in each of two orthogonal directions are present and are either monolithic with or equivalently bonded to beams, girders or columns, the longitudinal reinforcing or prestressing steel passing through the column reinforcement shall have a nominal tensile strength of one-third of the required one-way vertical strength of the connection of the floor or roof system to the column in each direction of beam or slab reinforcement passing through the column.

1614*A*.3.2 Structural steel, open web steel joist or joist girder, or composite steel and concrete frame structures. Frame structures constructed with a structural steel frame or a frame composed of open web steel joists, joist girders with or without other structural steel elements or a frame composed of composite steel or composite steel joists and reinforced concrete elements shall conform to the requirements of this section.

1614*A*.3.2.1 Columns. Each column splice shall have the minimum design strength in tension to transfer the design dead and live load tributary to the column between the splice and the splice or base immediately below.

1614*A*.3.2.2 Beams. End connections of all beams and girders shall have a minimum nominal axial tensile strength equal to the required vertical shear strength for *allowable stress design* (ASD) or two-thirds of the required shear strength for *load and resistance factor design* (LRFD) but not less than 10 kips (45 kN). For the purpose of this section, the shear force and the axial tensile force need not be considered to act simultaneously.

Exception: Where beams, girders, open web joist and joist girders support a concrete slab or concrete slab on metal deck that is attached to the beam or girder with not less than $^3/_8$-inch-diameter (9.5 mm) headed shear studs, at a spacing of not more than 12 inches (305 mm) on center, averaged over the length of the member, or other attachment having equivalent shear strength, and the slab contains continuous distributed reinforcement in each of two orthogonal directions with an area not less than 0.0015 times the concrete area, the nominal axial tension strength of the end connection shall be permitted to be taken as half the required vertical shear strength for ASD or one-third of the required shear strength for LRFD, but not less than 10 kips (45 kN).

1614*A*.4 Bearing wall structures. Bearing wall structures shall have vertical ties in all load-bearing walls and longitudinal ties, transverse ties and perimeter ties at each floor level in accordance with this section and as shown in Figure 1614*A*.4.

1614*A*.4.1 Concrete wall structures. Precast bearing wall structures constructed solely of reinforced or prestressed concrete, or combinations of these shall conform to the requirements of Sections 7.13, 13.3.8.5 and 16.5 of ACI 318.

1614*A*.4.2 Other bearing wall structures. Ties in bearing wall structures other than those covered in Section 1614*A*.4.1 shall conform to this section.

1614*A*.4.2.1 Longitudinal ties. Longitudinal ties shall consist of continuous reinforcement in slabs; continuous or spliced decks or sheathing; continuous or spliced members framing to, within or across walls; or connections of continuous framing members to walls. Longitudinal ties shall extend across interior load-bearing walls and shall connect to exterior load-bearing walls and shall be spaced at not greater than 10 feet (3038 mm) on center. Ties shall have a minimum nominal tensile strength, T_T, given by Equation 16*A*-46. For ASD the minimum nominal tensile strength shall be permitted to be taken as 1.5 times the allowable tensile stress times the area of the tie.

$$T_T = wLS \le \alpha_T S \qquad \textbf{(Equation 16}\textit{A}\textbf{-46)}$$

where:

L = The span of the horizontal element in the direction of the tie, between bearing walls, feet (m).

w = The weight per unit area of the floor or roof in the span being tied to or across the wall, psf (N/m^2).

S = The spacing between ties, feet (m).

α_T = A coefficient with a value of 1,500 pounds per foot (2.25 kN/m) for masonry bearing wall structures and a value of 375 pounds per foot (0.6 kN/m) for structures with bearing walls of cold-formed steel light-frame construction.

1614*A*.4.2.2 Transverse ties. Transverse ties shall consist of continuous reinforcement in slabs; continuous or spliced decks or sheathing; continuous or spliced members framing to, within or across walls; or connections of continuous framing members to walls. Transverse ties shall be placed no farther apart than the spacing of load-bearing walls. Transverse ties shall have minimum nominal tensile strength T_T, given by Equation 16*A*-46. For ASD the minimum nominal tensile strength shall be permitted to be taken as 1.5 times the allowable tensile stress times the area of the tie.

1614*A*.4.2.3 Perimeter ties. Perimeter ties shall consist of continuous reinforcement in slabs; continuous or spliced decks or sheathing; continuous or spliced members framing to, within or across walls; or connections of continuous framing members to walls. Ties around the perimeter of each floor and roof shall be located within 4 feet (1219 mm) of the edge and shall provide a nominal strength in tension not less than T_p, given by Equation 16*A*-47. For ASD the minimum nominal tensile strength shall be permitted to be taken as 1.5 times the allowable tensile stress times the area of the tie.

$$T_p = 200w \le \beta_T \qquad \textbf{(Equation 16A-47)}$$

For SI:

$$T_p = 90.7w \le \beta_T$$

where:

w = As defined in Section 1614*A*.4.2.1.

β_T = A coefficient with a value of 16,000 pounds (7200 kN) for structures with masonry bearing walls and a value of 4,000 pounds (1300 kN) for structures with bearing walls of cold-formed steel light-frame construction.

1614*A*.4.2.4 Vertical ties. Vertical ties shall consist of continuous or spliced reinforcing, continuous or spliced members, wall sheathing or other engineered systems. Vertical tension ties shall be provided in bearing walls and shall be continuous over the height of the building. The minimum nominal tensile strength for vertical ties within a bearing wall shall be equal to the weight of the wall within that *story* plus the weight of the diaphragm tributary to the wall in the *story* below. No fewer than two ties shall be provided for each wall. The strength of each tie need not exceed 3,000 pounds per foot (450 kN/m) of wall tributary to the tie for walls of masonry construction or 750 pounds per foot (140 kN/m) of wall tributary to the tie for walls of cold-formed steel light-frame construction.

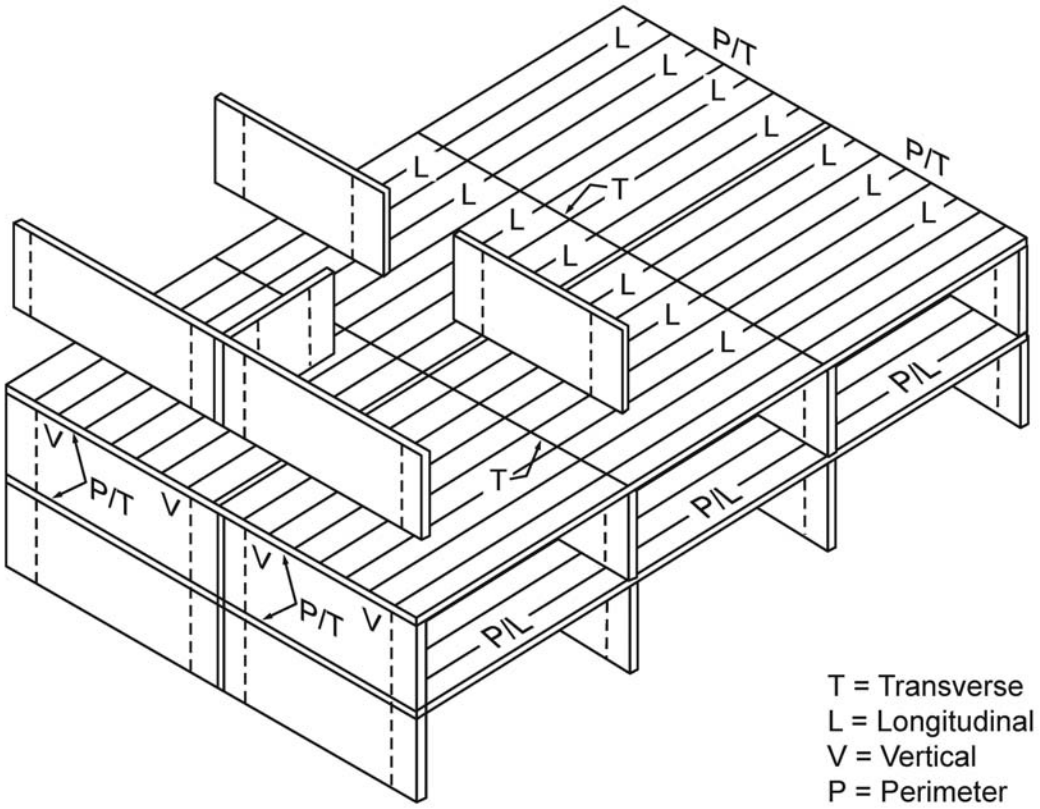


FIGURE 1614*A*.4
LONGITUDINAL, PERIMETER, TRANSVERSE AND VERTICAL TIES

SECTION 1615*A*
MODIFICATIONS TO ASCE 7

1615A.1 General. *The text of ASCE 7 shall be modified as indicated in Sections 1615A.1.1 through 1615A.1.41.*

1615A.1.1 ASCE 7, *Section 11.1. Modify ASCE 7 Section 11.1 by the adding Section 11.1.5 as follows:*

11.1.5 ***Structural design criteria.*** *Where design reviews are required in ASCE 7, Chapters 16, 17 or 18, the ground motion, analysis, and design methods, material assumptions and acceptance criteria proposed by the engineer shall be submitted to the enforcement agency in the form of structural design criteria for approval.*

[OSHPD 1 & 4] Peer review requirements in Section 3414A shall apply to design reviews required by ASCE 7 Chapters 17 and 18.

1615A.1.2A [DSA-SS] ASCE 7, Section 11.4.7. *Modify ASCE 7 Section 11.4.7 as follows:*

11.4.7 Site-specific ground motion procedures. *The site-specific ground motion procedure set forth in ASCE 7 Section 21 as modified in Section 1803A.6 of this code is permitted to be used to determine ground motion for any structure.*

Unless otherwise approved, the site-specific procedure per ASCE 7 Section 21 as modified by Section 1803A.6 of this code shall be used where any of the following conditions apply:

1) *A site response analysis shall be performed per Section 21.1, and a ground motion hazard analysis shall be performed in accordance with Section 21.2 for the following structures:*
   a) *Structure located in Type E soils and mapped MCE spectral acceleration at short periods (S_s) exceeds 2.0g.*
   b) *Structures located in Type F soils.*

   Exceptions:

   1) *Where S_s is less than 0.20g, use of Type E soil profile shall be permitted.*
   2) *Where exception to Section 20.3.1 is applicable except for base isolated buildings.*

2) *A ground motion hazard analysis shall be performed in accordance with Section 21.2 when:*
   a) *A time history response analysis of the building is performed as part of the design.*
   b) *The building site is located in an area identified in Section 4-317(e) of the California Administrative Code (Part 1, Title 24, C.C.R).*
   c) *For seismically isolated structures and for structures with damping systems.*

1615A.1.2B. [OSHPD 1 & 4] *Modify ASCE 7 Section 11.4.7 by adding the following:*

For buildings assigned to Seismic Design Category 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.

1615A.1.3 ASCE 7, Table 12.2-1. *Modify ASCE 7 Table 12.2-1 as follows:*

A. BEARING WALL SYSTEMS

5. Intermediate Precast Shear Walls—Not permitted by OSHPD.

14. Light-framed walls with shear panels of all other materials—Not permitted by OSHPD and DSA-SS.

B. BUILDING FRAME SYSTEMS

2. Steel eccentrically braced frames, non-moment-resisting connections at columns away from links—Not permitted by OSHPD.

4. Ordinary steel concentrically braced frames—Not permitted by OSHPD.

9. Intermediate Precast Shear Walls—Not permitted by OSHPD.

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

25. Buckling-restrained braced frames, non-moment-resisting beam-column connections —Not permitted by OSHPD.

27. Special steel plate shear wall—Not permitted by OSHPD.

C. MOMENT-RESISTING FRAME SYSTEMS

2. Special steel truss moment frames—Not permitted by OSHPD.

3. Intermediate steel moment frames—Not permitted by OSHPD.

4. Ordinary steel moment frames—Not permitted by OSHPD.

Exceptions:

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

3. *Systems listed in this section can be used for seismically isolated buildings when permitted by Section 1613A.6.2.*

1615A.1.4 ASCE 7, Section 12.2.3.1. *Modify ASCE 7 Section 12.2.3.1 by adding the following additional requirements for a two stage equivalent lateral force procedure or modal response spectrum procedure:*

e. *Where design of 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.*

1615A.1.5 ASCE 7, Section 12.3.3. *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.

1615A.1.6 ASCE 7, Section 12.7.2. *Modify ASCE 7 Section 12.7.2 by adding Item 5 to read as follows:*

5. *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.*

1615A.1.7 ASCE 7, Section 12.8.7. *Modify ASCE 7 Section 12.8.7 by replacing Equation 12.8-16 as follows:*

$$\theta = \frac{P_x \Delta I}{V_x h_{sx} C_d} \qquad (12.8\text{-}16)$$

1615A.1.8 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 shear shall not be less than the base shear calculated using the equivalent lateral force procedure of Section 12.8.

1615A.1.9 ASCE 7, Section 12.10.2.1. *Modify ASCE 7 Section 12.10.2.1 by adding the following:*

The value of $\Omega_0 Q_E$ used in load combinations with overstrength factors in ASCE 7-05 Section 12.4.3.2 for design of collector elements, splices and their connections to resisting elements may be taken as the largest of the following:

1) *$\Omega_0 F_x$ (where F_x is given by ASCE 7-05 Eq.12.8-11)*
2) *$\Omega_0 F_{px}$ (where F_{px} is given by ASCE 7-05 Eq. 12.10-1 ignoring the $0.2 S_{DS} I w_{px}$ minimum)*
3) *$0.2 S_{DS} I w_{px}$ (Minimum value from Section 12.10.1.1)*

1615A.1.10 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:

1. *The strength of the superstructure elements.*
2. *The maximum forces that would occur in the fully yielded structural system.*
3. *Forces from the Load Combinations with overstrength factor in accordance with ASCE 7 Section 12.4.3.2.*

Exceptions:

1. *Where referenced standards specify the use of higher design loads.*
2. *When it can be demonstrated that inelastic deformation of the foundation and superstructure-to-foundation connection will not result in a weak story or cause collapse of the structure.*
3. *Where basic structural system consists of light framed walls with shear panels.*

Where the computation of the seismic overturning moment is by the equivalent lateral-force method or the modal analysis method, reduction in overturning moment permitted by section 12.13.4 of ASCE 7 may be used.

Where moment resistance is assumed at the base of the superstructure elements, the rotation and flexural deformation of the foundation as well as deformation of the superstructure-to-foundation connection shall be considered in the drift and deformation compatibility analyses.

1615A.1.11 ASCE 7, Section 13.1.3. [OSHPD 1 & 4] *Modify ASCE 7 Section 13.1.3 by the following:*

For position retention, the design of supports and attachments for all nonstructural components shall have a component importance factor, Ip, equal to 1.5.

1615A.1.12 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 equipment.*

Exceptions:

a) *Equipment shall be anchored if it is permanently attached to the building utility services such as electricity, gas or water.*

1615A.1.25 ASCE 7, Section 16.1.3.2. *Modify ASCE 7 Section 16.1.3.2 by the following:*

Where next generation attenuation relations are used in accordance with Section 1803A.6.2, each pair of motions shall be scaled such that in the period range from 0.2T to 1.5T, the average of the SRSS spectra from all horizontal component pairs does not fall below the corresponding ordinate of the design response spectrum determined using NGA relations.

At sites within 3.1 miles (5 km) of an active fault that controls the hazard, each pair of components shall be rotated to the fault-normal and fault-parallel direction of the causative fault, and shall be scaled so that average of the fault-normal components is not less than the Maximum Considered Earthquake (MCE) response spectrum determined using NGA relations for each period range from 0.2T to 1.5T.

1615A.1.26 ASCE 7, Section 16.1.4. *Modify ASCE 7 Section 16.1.4 by the following:*

For each ground motion analyzed, the individual response parameters shall be multiplied by the following scalar quantities:

a. Force response parameters shall be multiplied by I/R, where I is the importance factor determined in accordance with Section 11.5.1, and R is the response modification coefficient selected in accordance with Section 12.2.1.

b. Drift quantities shall be multiplied by C_d/R, where C_d is the deflection amplification factor specified in Table 12.2-1.

The distribution of horizontal shear shall be in accordance with Section 12.8.4.

1615A.1.27 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.

1615A.1.28 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 percent of the required live loads.

1615A.1.29 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.

b) Where site is located more than 3.1 miles (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.

1615A.1.30 ASCE 7, Section 16.2.4.1. *Replace ASCE 7 exception to Section 16.2.3 by the following:*

Where this standard requires the consideration of the load combinations with overstrength factor of Section 12.4.3.2, average demand from MCE analysis obtained from suite of analysis in accordance with Section 16.2.4 shall be used with Immediate Occupancy (IO) acceptance criteria in Section 16.2.4.2.

1615A.1.31 ASCE 7, Section 16.2.4.2 [OSHPD 1 & 4] *Modify ASCE 7 Section 16.2.4.2 by the following:*

Acceptance criteria for elements subjected to deformation beyond their linear range of response shall be based on ASCE 41 for Immediate Occupancy (IO) at Design Earthquake (DE) and Life Safety (LS) at Maximum Considered Earthquake (MCE). For LS acceptance criteria at MCE, primary components shall be within the acceptance criteria for primary components and secondary components shall be within the acceptance criteria for secondary components.

1615A.1.32 ASCE 7, Section 17.2.1. *Modify ASCE 7 Section 17.2.1 by adding the following:*

The importance factor, I_p, for parts and portions of a seismically isolated building shall be the same as that required for a fixed-base building of the same occupancy category.

1615A.1.33 ASCE 7, Section 17.2.4.7. *Modify ASCE 7 Section 17.2.4.7 by adding the following:*

The effects of uplift and/or rocking shall be explicitly accounted for in the analysis and in the testing of the isolator units.

1615A.1.34 ASCE 7, Section 17.2.5.2. *Modify ASCE 7, Section 17.2.5.2 by adding the following:*

The separation requirements for the building above the isolation system and adjacent buildings shall be the sum of the factored displacements for each building. The factors to be used in determining separations shall be:

1. For seismically isolated buildings, the deformation resulting from the analyses using the maximum considered earthquake unmodified by R_I.

2. For fixed based buildings, C_d times the elastic deformations resulting from an equivalent static analysis using the seismic base shear computed via ASCE 7 Section 12.8.

1615A.1.35 ASCE 7, Section 17.3.2. *Replace ASCE 7, Section 17.3.2 with the following:*

17.3.2 Ground Motion Histories. *Where response history procedures are used, ground motions shall consist of pairs of appropriate horizontal ground motion acceleration components developed in accordance with Section 16.1.3.2 except that 0.2T and 1.5T shall be replaced by*

0.5 T_D *and* $1.25T_M$*, respectively, where* T_D *and* T_M *are defined in Section 17.5.3.*

1615A.1.36 ASCE 7, Section 17.4. *Modify ASCE 7, Section 17.4 by adding the following:*

17.4.2.3 Linear procedures. *Linear procedures shall be limited to structures located at sites with* S_1 *less than 0.6g.*

1615A.1.37 ASCE 7, Section 17.6 *Modify ASCE 7, Section 17.6 by 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.*

1615A.1.38 ASCE 7, Section 18.3.1. *Modify ASCE 7, Section 18.3.1 by replacing the third paragraph with the following:*

If the calculated force in an element of the seismic force resisting system does not exceed 1.5 times its nominal strength for the Maximum Considered Earthquake (MCE) nor its nominal strength for the design earthquake (DE), the element is permitted to be modeled as linear.

1615A.1.39 ASCE 7, Section 21.4. *Replace ASCE 7, Section 21.4 with the following:*

21.4 Design Acceleration Parameters. *Where the site-specific procedure is used to determine the design ground motion in accordance with Section 21.3, the parameter* S_{DS} *shall be taken as the spectral acceleration,* S_a*, obtained from the site-specific spectra at a period of 0.2 sec, except that it shall not be taken less than 90 percent of the peak spectral acceleration, Sa, at any period larger than 0.2 second. The parameter* S_{D1} *shall be taken as the greater of the spectral acceleration,* S_a*, at a period of 1 sec or two times the spectral acceleration,* S_a*, at a period of 2 sec.*

For use with the equivalent lateral force procedure, the site specific spectral acceleration, S_a *at T shall be permitted to replace* S_{D1}/T *in Equation 12.8-3 and* $S_{D1}T_L/T^2$ *in Equation 12.8-4. The parameter* S_{DS} *calculated per this section shall be permitted to be used in Equations 12.8-2 and 12.8-5. The mapped value of* S_1 *shall be used in Equation 12.8-6. The parameters* S_{MS} *and* S_{M1} *shall be taken as 1.5 times* S_{DS} *and* S_{D1}*, respectively. The values so obtained shall not be less than 80 percent of the values determined in accordance with Section 11.4.3 for* S_{MS} *and* S_{M1} *and Section 11.4.4 for* S_{DS} *and* S_{D1}*.*

1615A.1.40 Earthquake Motion Measuring Instrumentation and Monitoring. [OSHPD 1 & 4] *Modify ASCE 7 by the following:*

Scope: *For buildings with a seismic isolation system, a damping system or a lateral force resisting system (LFRS) not listed in ASCE 7 Table 12.2-1, earthquake motion measuring instrumentation and monitoring shall be required. Monitoring requirements shall also apply to welded steel moment frame buildings constructed under a permit issued prior to October 25, 1994.*

Instrumentation: *There shall be a sufficient number of instruments to characterize the response of the building during an earthquake and shall include at least one tri-axial free field instrument or equivalent. A proposal for instrumentation and equipment specifications shall be forwarded to the enforcement agency for review and approval. The owner of the building shall be responsible for the implementation of the instrumentation program. Maintenance of the instrumentation and removal/processing of the records shall be the responsibility of the enforcement agency.*

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

1615A.1.41 Operational Nonstructural Performance Level Requirements. [OSHPD 1 & 4] *New buildings designed and constructed to this code shall be deemed to satisfy operational nonstructural performance level when:*

1. *The facility has on-site supplies of water and holding tanks for wastewater, sufficient for 72 hours of emergency operations, which are integrated into the building plumbing systems. As an alternative, hook-ups to allow for the use of transportable sources of water and sanitary waste water disposal shall be permitted.*
2. *An on-site emergency system as defined within Part 3, Title 24 is incorporated into the building electrical system for critical care areas. Additionally, the system shall provide for radiological service and an onsite fuel supply for 72 hours of acute care operation.*

CALIFORNIA BUILDING CODE-MATRIX ADOPTION TABLE
CHAPTER 18 – SOILS AND FOUNDATIONS

Adopting agency			HCD			DSA			OSHPD											
	BSC	SFM	1	2	1-AC	AC	SS	SS/CC	1	2	3	4	CSA	DPH	AGR	DWR	CEC	CA	SL	SLC
Adopt entire chapter											**X**									
Adopt entire chapter as amended (amended sections listed below)	X		**X**	**X**						**X**										
Adopt only those sections that are listed below																				
Chapter/Section																				
1801.2			X	X																
1803.1.1 – 1803.1.1.3			X	X																
1803.2										X										
1803.5.12	X																			
1803.6										X										
1803.7										X										
1810.3.1.5.1										X										
1810.3.10.4.1										X										

gation shall be conducted to assess the potential consequences and address mitigation measures.

1803.5.8 Compacted fill material. Where shallow foundations will bear on compacted fill material more than 12 inches (305 mm) in depth, a geotechnical investigation shall be conducted and shall include all of the following:

1. Specifications for the preparation of the site prior to placement of compacted fill material.
2. Specifications for material to be used as compacted fill.
3. Test methods to be used to determine the maximum dry density and optimum moisture content of the material to be used as compacted fill.
4. Maximum allowable thickness of each lift of compacted fill material.
5. Field test method for determining the in-place dry density of the compacted fill.
6. Minimum acceptable in-place dry density expressed as a percentage of the maximum dry density determined in accordance with Item 3.
7. Number and frequency of field tests required to determine compliance with Item 6.

1803.5.9 Controlled low-strength material (CLSM). Where shallow foundations will bear on controlled low-strength material (CLSM), a geotechnical investigation shall be conducted and shall include all of the following:

1. Specifications for the preparation of the site prior to placement of the CLSM.
2. Specifications for the CLSM.
3. Laboratory or field test method(s) to be used to determine the compressive strength or bearing capacity of the CLSM.
4. Test methods for determining the acceptance of the CLSM in the field.
5. Number and frequency of field tests required to determine compliance with Item 4.

1803.5.10 Alternate setback and clearance. Where setbacks or clearances other than those required in Section 1808.7 are desired, the *building official* shall be permitted to require a geotechnical investigation by a *registered design professional* to demonstrate that the intent of Section 1808.7 would be satisfied. Such an investigation shall include consideration of material, height of slope, slope gradient, load intensity and erosion characteristics of slope material.

1803.5.11 Seismic Design Categories C through F. For structures assigned to *Seismic Design Category* C, D, E or F in accordance with Section 1613, a geotechnical investigation shall be conducted, and shall include an evaluation of all of the following potential geologic and seismic hazards:

1. Slope instability.
2. Liquefaction.
3. Differential settlement.
4. Surface displacement due to faulting or lateral spreading.

1803.5.12 Seismic Design Categories D through F. For structures assigned to *Seismic Design Category* D, E or F in accordance with Section 1613, the geotechnical investigation required by Section 1803.5.11, shall also include:

1. The determination of lateral pressures on foundation walls and retaining walls due to earthquake motions.
2. ***[BSC]*** The determination of lateral *earth* pressures on foundation walls *supporting more than 6 feet of backfill height,* due to earthquake motions.
3. The potential for liquefaction and soil strength loss evaluated for site peak ground accelerations, magnitudes and source characteristics consistent with the design earthquake ground motions. Peak ground acceleration shall be permitted to be determined based on a site-specific study taking into account soil amplification effects, as specified in Chapter 21 of ASCE 7, or, in the absence of such a study, peak ground accelerations shall be assumed equal to $S_{DS}/2.5$, where S_{DS} is determined in accordance with Section 1613.5.4.
4. An assessment of potential consequences of liquefaction and soil strength loss, including estimation of differential settlement, lateral movement, lateral loads on foundations, reduction in foundation soil-bearing capacity, increases in lateral pressures on retaining walls and flotation of buried structures.
5. Discussion of mitigation measures such as, but not limited to, ground stabilization, selection of appropriate foundation type and depths, selection of appropriate structural systems to accommodate anticipated displacements and forces, or any combination of these measures and how they shall be considered in the design of the structure.

1803.6 Reporting. Where geotechnical investigations are required, a written report of the investigations shall be submitted to the *building official* by the owner or authorized agent at the time of *permit* application. This geotechnical report shall include, but need not be limited to, the following information:

1. A plot showing the location of the soil investigations.
2. A complete record of the soil boring and penetration test logs and soil samples.
3. A record of the soil profile.
4. Elevation of the water table, if encountered.
5. Recommendations for foundation type and design criteria, including but not limited to: bearing capacity of natural or compacted soil; provisions to mitigate the effects of expansive soils; mitigation of the effects of liquefaction, differential settlement and varying soil strength; and the effects of adjacent loads.
6. Expected total and differential settlement.
7. Deep foundation information in accordance with Section 1803.5.5.
8. Special design and construction provisions for foundations of structures founded on expansive soils, as necessary.

9. Compacted fill material properties and testing in accordance with Section 1803.5.8.
10. Controlled low-strength material properties and testing in accordance with Section 1803.5.9.
11. *[OSHPD 2] The report shall consider the effects of seismic hazard in accordance with Section 1803.7.*

1803.7 Engineering geologic reports. [OSHPD 2]

1803.7.1 *Geologic and earthquake engineering reports shall be required for all proposed construction.*

Exceptions:

1. *Reports are not required for one-story, wood-frame and light-steel-frame buildings of Type V 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); nonstructural, associated structural or voluntary structural alterations and incidental structural additions or alterations, and structural repairs for other than earthquake damage (See Section 3402A.1 for definitions of terms in this section).*
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.*

1803.7.2 *The purpose of the engineering geologic report shall be to identify geologic and seismic conditions that may require project mitigations. The reports shall contain data which provide an assessment of the nature of the site and potential for earthquake damage based on appropriate investigations of the regional and site geology, project foundation conditions and the potential seismic shaking at the site. The report shall be prepared by a California-certified engineering geologist in consultation with a California-registered geotechnical engineer.*

The preparation of the engineering geologic report shall consider the most recent CGS Note 48; Checklist for the Review of Engineering Geology and Seismology Reports for California Public School, Hospitals, and Essential Services Buildings. In addition, the most recent version of CGS Special Publication 42, Fault Rupture Hazard Zones in California, shall be considered for project sites proposed within an Alquist-Priolo Earthquake Fault Zone. The most recent version of CGS Special Publication 117, Guidelines for Evaluating and Mitigating Seismic Hazards in California, shall be considered for project sites proposed within a Seismic Hazard Zone. All conclusions shall be fully supported by satisfactory data and analysis.

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

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

SECTION 1804
EXCAVATION, GRADING AND FILL

1804.1 Excavation near foundations. Excavation for any purpose shall not remove lateral support from any foundation without first underpinning or protecting the foundation against settlement or lateral translation.

1804.2 Placement of backfill. The excavation outside the foundation shall be backfilled with soil that is free of organic material, construction debris, cobbles and boulders or with a controlled low-strength material (CLSM). The backfill shall be placed in lifts and compacted in a manner that does not damage the foundation or the waterproofing or dampproofing material.

Exception: CLSM need not be compacted.

1804.3 Site grading. The ground immediately adjacent to the foundation shall be sloped away from the building at a slope of not less than one unit vertical in 20 units horizontal (5-percent slope) for a minimum distance of 10 feet (3048 mm) measured perpendicular to the face of the wall. If physical obstructions or lot lines prohibit 10 feet (3048 mm) of horizontal distance, a 5-percent slope shall be provided to an *approved* alternative method of diverting water away from the foundation. Swales used for this purpose shall be sloped a minimum of 2 percent where located within 10 feet (3048 mm) of the building foundation. Impervious surfaces within 10 feet (3048 mm) of the building foundation shall be sloped a minimum of 2 percent away from the building.

Exception: Where climatic or soil conditions warrant, the slope of the ground away from the building foundation shall be permitted to be reduced to not less than one unit vertical in 48 units horizontal (2-percent slope).

The procedure used to establish the final ground level adjacent to the foundation shall account for additional settlement of the backfill.

1804.4 Grading and fill in flood hazard areas. In *flood hazard areas* established in Section 1612.3, grading and/or fill shall not be *approved*:

1. Unless such fill is placed, compacted and sloped to minimize shifting, slumping and erosion during the rise and fall of flood water and, as applicable, wave action.
2. In floodways, unless it has been demonstrated through hydrologic and hydraulic analyses performed by a *registered design professional* in accordance with standard engineering practice that the proposed grading or fill, or both, will not result in any increase in flood levels during the occurrence of the *design flood*.
3. In flood hazard areas subject to high-velocity wave action, unless such fill is conducted and/or placed to avoid diversion of water and waves toward any building or structure.
4. Where design flood elevations are specified but floodways have not been designated, unless it has been demonstrated that the cumulative effect of the proposed

SECTION 2105*A*
QUALITY ASSURANCE

2105*A*.1 General. A quality assurance program shall be used to ensure that the constructed masonry is in compliance with the *construction documents*.

The quality assurance program shall comply with the inspection and testing requirements of Chapter 17*A*.

2105*A*.2 Acceptance relative to strength requirements.

2105*A*.2.1 Compliance with f'_m. Compressive strength of masonry shall be considered satisfactory if the compressive strength of each masonry wythe and grouted collar joint equals or exceeds the value of f'_m for clay and concrete masonry and *requirements of Section 2105A.2.2 is satisfied.* For partially grouted clay and concrete masonry, the compressive strength of both the grouted and ungrouted masonry shall equal or exceed the applicable f'_m. *The specified compressive strength, f'_m, assumed in design shall be 1,500 psi (10.34 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 2105A.4.*

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 assume that the reinforcement will be placed in a location that will produce the largest stresses within the tolerances allowed in Section 2104A.1.1 and shall take into account the mortar joint depth. In no case shall the f'_m assumed in design exceed 3,000 psi (20.7 MPa).*

Where an f'_m greater than 1,500 psi (10.34 MPa) 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 compressive strength of masonry f'_m shall be provided in accordance with Sections 2105A.2.2.2, 2105A.4 and 2105A.2.2.1.4. Substantiation for the specified compressive strength prior to the start of construction may be obtained in accordance with Section 2105A.2.2.2.2.

2105*A*.2.2 Determination of compressive strength. The compressive strength for each wythe shall be determined by the unit strength method or by the prism test method as specified herein.

2105*A*.2.2.1 Unit strength method.

2105*A*.2.2.1.1 Clay masonry. The compressive strength of masonry shall be determined based on the strength of the units and the type of mortar specified using Table 2105*A*.2.2.1.1, provided:

1. Units are sampled and tested to verify compliance with ASTM C 62, ASTM C 216 or ASTM C 652.
2. Thickness of bed joints does not exceed $^5/_8$ inch (15.9 mm).
3. For grouted masonry, the grout meets one of the following requirements:
   3.1. Grout conforms to Article 2.2 of TMS 602/ACI 530.1/ASCE 6.
   3.2. Minimum grout compressive strength equals or exceeds f'_m but not less than 2,000 psi (13.79 MPa). The compressive strength of grout shall be determined in accordance with ASTM C 1019.

TABLE 2105*A*.2.2.1.1
COMPRESSIVE STRENGTH OF CLAY MASONRY

NET AREA COMPRESSIVE STRENGTH OF CLAY MASONRY UNITS (psi)		NET AREA COMPRESSIVE STRENGTH OF MASONRY (psi)
Type M or S mortar	Type N mortar	
1,700	2,100	1,000
3,350	4,150	1,500
4,950	6,200	2,000
6,600	8,250	2,500
8,250	10,300	3,000
9,900	—	3,500
11,500	—	4,000

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

2105*A*.2.2.1.2 Concrete masonry. The compressive strength of masonry shall be determined based on the strength of the unit and type of mortar specified using Table 2105*A*.2.2.1.2, provided:

1. Units are sampled and tested to verify compliance with ASTM C 55 or ASTM C 90.
2. Thickness of bed joints does not exceed $^5/_8$ inch (15.9 mm).
3. For grouted masonry, the grout meets one of the following requirements:
   3.1. Grout conforms to Article 2.2 of TMS 602/ACI 530.1/ASCE 6.
   3.2. Minimum grout compressive strength equals or exceeds f'_m but not less than 2,000 psi (13.79 MPa). The compressive strength of grout shall be determined in accordance with ASTM C 1019.

TABLE 2105*A*.2.2.1.2
COMPRESSIVE STRENGTH OF CONCRETE MASONRY

NET AREA COMPRESSIVE STRENGTH OF CONCRETE MASONRY UNITS (psi)		NET AREA COMPRESSIVE STRENGTH OF MASONRY (psi)[a]
Type M or S mortar	Type N mortar	
1,250	1,300	1,000
1,900	2,150	1,500
2,800	3,050	2,000
3,750	4,050	2,500
4,800	5,250	3,000

For SI: 1 inch = 25.4 mm, 1 pound per square inch = 0.00689 MPa.
a. For units less than 4 inches in height, 85 percent of the values listed.

2105*A*.2.2.1.3 AAC masonry. *Not permitted.*

2105A.2.2.1.4 Mortar and grout tests. *These tests are to establish whether the masonry components meet the specified component strengths. At the beginning of all masonry work, at least one test sample of the mortar and grout shall be taken on three successive working days and at least at one-week intervals thereafter. They shall meet the minimum strength requirement given in Sections 2103A.8 and 2103A.12 for mortar and grout, respectively. Additional samples shall be taken whenever any change in materials or job conditions occur, or whenever in the judgment of the architect, structural engineer or the enforcement agency such tests are necessary to determine the quality of the material. When the prism test method of Section 2105A.2.2.2 is used, the tests in this section are not required.*

Test specimens for mortar and grout shall be made as set forth in ASTM C 1586 and ASTM C 1019

2105*A*.2.2.2 Prism test method.

2105*A*.2.2.2.1 General. The compressive strength of clay and concrete masonry shall be determined by the prism test method *prior to the start of construction and during construction:*

1. Where specified in the *construction documents*.
2. Where masonry does not meet the requirements for application of the unit strength method in Section 2105*A*.2.2.1.
3. *Where required by Section 2105A.2.1.*

2105*A*.2.2.2.2 Number of prisms per test. *Prior to the start of construction, a* prism test shall consist of *five* prisms constructed and tested in accordance with ASTM C 1314. *A set of three masonry prisms shall be built during construction in accordance with ASTM C 1314 for each 5,000 square feet (465 m²) of wall area, but not less than one set of three prisms for the project. Each set of prisms shall equal or exceed f'_m.*

2105*A*.3 Testing prisms from constructed masonry. When *approved* by the *building official*, acceptance of masonry that does not meet the requirements of Section 2105*A*.2.2.1, 2105*A*.2.2.2, *2105A.4 or 2105A.2.2.1.4* shall be permitted to be based on tests of prisms cut from the masonry construction in accordance with Sections 2105*A*.3.1, 2105*A*.3.2 and 2105*A*.3.3.

2105*A*.3.1 Prism sampling and removal. A set of three masonry prisms that are at least 28 days old shall be saw cut from the masonry for each 5,000 square feet (465 m²) of the wall area that is in question but not less than one set of three masonry prisms for the project. The length, width and height dimensions of the prisms shall comply with the requirements of ASTM C 1314. Transporting, preparation and testing of prisms shall be in accordance with ASTM C 1314.

2105*A*.3.2 Compressive strength calculations. The compressive strength of prisms shall be the value calculated in accordance ASTM C 1314, except that the net cross-sectional area of the prism shall be based on the net mortar bedded area.

2105*A*.3.3 Compliance. Compliance with the requirement for the specified compressive strength of masonry, f'_m, shall be considered satisfied provided the modified compressive strength equals or exceeds the specified f'_m. Additional testing of specimens cut from locations in question shall be permitted.

2105A.4 Masonry core testing. *Not less than two cores shall be taken from each building for each 5,000 square feet (465 m²) of the greater of the masonry wall area or the floor area or fraction thereof. The architect or structural engineer in responsible charge of the project or his or her representative (inspector) shall select the areas for sampling. Cores shall be a minimum of 3 3/4 inches (76 mm) in diameter and shall be taken in such a manner as to exclude masonry unit webs and reinforcing steel. The inspector of record or testing agency shall inspect the coring of the masonry walls.*

Visual examination of all cores shall be made and the condition of the cores reported. One half of the number of cores taken shall be tested in shear. The shear test shall test both joints between the grout core and the outside wythes or face shells of the masonry. Shear testing apparatus shall be of a design approved by the enforcement agency. Core samples shall not be soaked before testing. The unit shear on the cross section of the core shall not be less than $2.5\sqrt{f'_m}$ psi.

All cores shall be submitted to the laboratory for examination regardless of whether the core specimens failed during cutting operation. The laboratory 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.

SECTION 2106*A*
SEISMIC DESIGN

2106*A*.1 Seismic design requirements for masonry. Masonry structures and components shall comply with the requirements in Section 1.17 of TMS 402/ACI 530/ASCE 5

2205A.4.1.5.1 AISC 341, Part I, Section 13, Members. *Add a new section as follows:*

AISC 341, 13.2f—Member Types

The use of rectangular HSS are not permitted for bracing members, unless filled solid with cement grout having a minimum compressive strength of 3000 psi (20.7 MPa) at 28 days. The effects of composite action in the filled composite brace shall be considered in the sectional properties of the system where it results in the more severe loading condition or detailing.

2205A.4.1.5.2 Part I, Section 13: Add Section 13.7 as follows.

13.7 Beam to Column Connections.

SCBF frames shall have moment-resisting beam-column connections that can resist a moment equal to the lesser of the available flexural strength of the beam or the column in the SCBF bays. The connection shall include CJP welds from the beam flanges to the column flange, or to a plate in the case of column weak axis connections.

2205A.4.1.6 Part I, Section 14, Ordinary Concentrically Braced Frames (OCBF). *Not permitted by OSHPD.*

2205A.4.1.7 Part I, Section 15, Eccentrically Braced Frames (EBF) Modifications.

Part I, 15.4 Link-to-Column Connections.

Exception: *Not permitted by OSHPD.*

2205*A*.4.2 ***Appendix S, Qualifying Cyclic Tests of Beam-to-Column and Link-to-Column Connections Modifications.***

2205A.4.2.1 Appendix S, S3, Definitions. *Replace the definition of "Inelastic rotation" with the following:*

INELASTIC ROTATION. *The permanent or plastic portion of the rotation angle between a beam and the column, or between a link and the column of the test specimen, measured in radians. The inelastic rotation shall be computed based upon an analysis of the test specimen deformations. Sources of inelastic rotation include yielding of members and connectors, yielding of connection elements and slip between members and connection elements. For beam-to-column moment connections in special moment frames, the inelastic rotation is represented by the plastic chord rotation angle calculated as the plastic deflection of the beam or girder, at the center of its span divided by the distance between the center of the beam span and the centerline of the panel zone of the beam-column connection. For link-to-column connections in eccentrically braced frames, inelastic rotation shall be computed based upon the assumption that inelastic action is concentrated at a single point located at the intersection of the centerline of the link with the face of the column.*

2205A.4.2.2 Appendix S, S3, Definitions. *Add the following:*

RAPID STRENGTH DETERIORATION. *A mode of behavior characterized by a sudden loss of strength. In a cyclic test with constant or increasing deformation amplitude, a loss of strength of more than 50 percent of the strength attained in the previous excursion in the same loading direction.*

2205A.4.2.3 Appendix S, Section S5.2, Size of Members. *Replace as follows:*

The size of the beam or link used in the test specimen shall be within the following limits:

1. *At least one of the test beams or links shall be no less than 100 percent of the depth of the prototype beam or link. For the remaining specimens, the depth of the test beam or link shall be no less than 90 percent of the depth of the prototype beam or link.*
2. *At least one of the test beams or links shall be no less than 100 percent of the weight per foot of the prototype beam or link. For the remaining specimens, the weight per foot of the test beam or link shall be no less than 75 percent of the weight per foot of the prototype beam or link.*

The size of the column used in the test specimen shall properly represent the inelastic action in the column, as per the requirements in Section S5.1. In addition, the depth of the test column shall be no less than 90 percent of the depth of the prototype column.

Extrapolation beyond the limitations stated in this section shall be permitted subject to peer review and approval by the enforcement agency.

2205A.4.2.4 Appendix S, Section S10, Acceptance Criteria. *Replace as follows:*

The test specimens must satisfy the strength, interstory drift angle, or link rotation angle, and inelastic rotation requirements of these provisions for the special moment frame and eccentrically braced frame connection as applicable. The test specimen must sustain the required interstory drift angle, or link rotation angle, and inelastic rotation for at least two complete loading cycles without exhibiting rapid strength deterioration.

2205*A*.4.3 ***Appendix T, Qualifying Cyclic Tests of Buckling-Restrained Braces Modification.***

AISC 341, T5.3, Similarity of Brace Test Specimen and Prototype, replace Item 2 with the following:

The axial yield strength of the steel core Pysc *of the brace test specimen shall not be more than 20 percent above nor 50 percent less than that of the test specimen where both strengths are based on the core area,* Asc*, multiplied by the yield strength as determined from a coupon test. In addition, the material of the test specimen shall be the same ASTM classification and grade as the prototype.*

2205A.5 MODIFICATIONS TO AISC 358. [OSHPD 1 & 4]

2205A.5.1 2. Design Requirements, 2.1 Special and Intermediate Moment Frame Connection Types, Table 2-1 Prequalified Moment Connections modifications

The prequalified bolted moment connections are not permitted in buildings.

Exception: *Erection bolts are permitted in buildings.*

SECTION 2206A
STEEL JOISTS

2206A.1 General. The design, manufacture and use of open web steel joists and joist girders shall be in accordance with one of the following Steel Joist Institute (SJI) specifications:

1. SJI CJ-1.0
2. SJI K-1.1
3. SJI LH/DLH-1.1
4. SJI JG-1.1

Where required, the seismic design of buildings shall be in accordance with the additional provisions of Section 2205A.2 or 2210A.5.

2206A.2 Design. The *registered design professional* shall indicate on the *construction documents* the steel joist and/or steel joist girder designations from the specifications *listed* in Section 2206A.1 and shall indicate the requirements for joist and joist girder design, layout, end supports, anchorage, non-SJI standard bridging, bridging termination connections and bearing connection design to resist uplift and lateral loads. These documents shall indicate special requirements as follows:

1. Special loads including:
    1.1. Concentrated loads;
    1.2. Nonuniform loads;
    1.3. Net uplift loads;
    1.4. Axial loads;
    1.5. End moments; and
    1.6. Connection forces.
2. Special considerations including:
    2.1. Profiles for nonstandard joist and joist girder configurations (standard joist and joist girder configurations are as indicated in the SJI catalog);
    2.2. Oversized or other nonstandard web openings; and
    2.3. Extended ends.
3. Deflection criteria for live and total loads for non-SJI standard joists.

2206A.3 Calculations. The steel joist and joist girder manufacturer shall design the steel joists and/or steel joist girders in accordance with the current SJI specifications and load tables to support the load requirements of Section 2206A.2. The *registered design professional* may require submission of the steel joist and joist girder calculations as prepared by a *registered design professional* responsible for the product design. If requested by the *registered design professional*, the steel joist manufacturer shall submit design calculations with a cover letter bearing the seal and signature of the joist manufacturer's *registered design professional*. In addition to standard calculations under this seal and signature, submittal of the following shall be included:

1. Non-SJI standard bridging details (e.g. for cantilevered conditions, net uplift, etc.).
2. Connection details for:
    2.1. Non-SJI standard connections (e.g. flush-framed or framed connections);
    2.2. Field splices; and
    2.3. Joist headers.

2206A.4 Steel joist drawings. Steel joist placement plans shall be provided to show the steel joist products as specified on the *construction documents* and are to be utilized for field installation in accordance with specific project requirements as stated in Section 2206A.2. Steel placement plans shall include, at a minimum, the following:

1. Listing of all applicable loads as stated in Section 2206A.2 and used in the design of the steel joists and joist girders as specified in the *construction documents*.
2. Profiles for nonstandard joist and joist girder configurations (standard joist and joist girder configurations are as indicated in the SJI catalog).
3. Connection requirements for:
    3.1. Joist supports;
    3.2. Joist girder supports;
    3.3. Field splices; and
    3.4. Bridging attachments.
4. Deflection criteria for live and total loads for non-SJI standard joists.
5. Size, location and connections for all bridging.
6. Joist headers.

2206A.4.1 Design approval. [DSA-SS] *Joist and joist girder design calculations and profiles with member sizes and connection details, and joist placement plans shall be provided to the enforcement agency and approved prior to joist fabrication, in accordance with Title 24, Part 1. Joist and joist girder design calculations and profiles with member sizes and connection details shall bear the signature and stamp or seal of the registered engineer or licensed architect responsible for the joist design. Alterations to the approved joist and joist girder design calculations and profiles with member sizes and connection details, or to fabricated joists are subject to the approval of the enforcement agency.*

2206A.5 Certification. At completion of manufacture, the steel joist manufacturer shall submit a *certificate of compliance* in accordance with Section 1704.2.2 stating that work was per-

shall be tested in accordance with, and meet the acceptance criteria of, DASMA 107.

Exception: Garage doors using foam plastic insulation complying with Section 2603.3 in detached and attached garages associated with one- and two-family dwellings need not be provided with a thermal barrier.

2603.4.1.10 Siding backer board. Foam plastic insulation of not more than 2,000 British thermal units per square feet (Btu/sq. ft.) (22.7 mJ/m^2) as determined by NFPA 259 shall be permitted as a siding backer board with a maximum thickness of $^1/_2$ inch (12.7 mm), provided it is separated from the interior of the building by not less than 2 inches (51 mm) of mineral fiber insulation or equivalent or where applied as insulation with residing over existing wall construction.

2603.4.1.11 Interior trim. Foam plastic used as interior *trim* in accordance with Section 2604 shall be permitted without a thermal barrier.

2603.4.1.12 Interior signs. Foam plastic used for interior signs in *covered mall buildings* in accordance with Section 402.16 shall be permitted without a thermal barrier. Foam plastic signs that are not affixed to interior building surfaces shall comply with Chapter 8 of the *California Fire Code*.

2603.4.1.13 Type V construction. Foam plastic spray applied to a sill plate and header of Type V construction is subject to all of the following:

1. The maximum thickness of the foam plastic shall be $3^1/_4$ inches (82.6 mm).
2. The density of the foam plastic shall be in the range of 1.5 to 2.0 pcf (24 to 32 kg/m^3).
3. The foam plastic shall have a flame spread index of 25 or less and an accompanying smoke-developed index of 450 or less when tested in accordance with ASTM E 84 or UL 723.

2603.5 Exterior walls of buildings of any height. *Exterior walls* of buildings of Type I, II, III or IV construction of any height shall comply with Sections 2603.5.1 through 2603.5.7. *Exterior walls* of cold storage buildings required to be constructed of noncombustible materials, where the building is more than one *story* in height, shall also comply with the provisions of Sections 2603.5.1 through 2603.5.7. *Exterior walls* of buildings of Type V construction shall comply with Sections 2603.2, 2603.3 and 2603.4.

2603.5.1 Fire-resistance-rated walls. Where the wall is required to have a fire-resistance rating, data based on tests conducted in accordance with ASTM E 119 or UL 263 shall be provided to substantiate that the fire-resistance rating is maintained.

2603.5.2 Thermal barrier. Any foam plastic insulation shall be separated from the building interior by a thermal barrier meeting the provisions of Section 2603.4, unless special approval is obtained on the basis of Section 2603.9.

Exception: One-story buildings complying with Section 2603.4.1.4.

2603.5.3 Potential heat. The potential heat of foam plastic insulation in any portion of the wall or panel shall not exceed the potential heat expressed in Btu per square feet (mJ/m^2) of the foam plastic insulation contained in the wall assembly tested in accordance with Section 2603.5.5. The potential heat of the foam plastic insulation shall be determined by tests conducted in accordance with NFPA 259 and the results shall be expressed in Btu per square feet (mJ/m^2).

Exception: One-story buildings complying with Section 2603.4.1.4.

2603.5.4 Flame spread and smoke-developed indexes. Foam plastic insulation, exterior coatings and facings shall be tested separately in the thickness intended for use, but not to exceed 4 inches (102 mm), and shall each have a flame spread index of 25 or less and a smoke-developed index of 450 or less as determined in accordance with ASTM E 84 or UL 723.

Exception: Prefabricated or factory-manufactured panels having minimum 0.020-inch (0.51 mm) aluminum facings and a total thickness of $^1/_4$ inch (6.4 mm) or less are permitted to be tested as an assembly where the foam plastic core is not exposed in the course of construction.

2603.5.5 Test standard. The wall assembly shall be tested in accordance with and comply with the acceptance criteria of NFPA 285.

Exception: One-story buildings complying with Section 2603.4.1.4.

2603.5.6 Label required. The edge or face of each piece of foam plastic insulation shall bear the *label* of an *approved agency.* The *label* shall contain the manufacturer's or distributor's identification, model number, serial number or definitive information describing the product or materials' performance characteristics and *approved agency*'s identification.

2603.5.7 Ignition. *Exterior walls* shall not exhibit sustained flaming where tested in accordance with NFPA 268. Where a material is intended to be installed in more than one thickness, tests of the minimum and maximum thickness intended for use shall be performed.

Exception: Assemblies protected on the outside with one of the following:

1. A thermal barrier complying with Section 2603.4.
2. A minimum 1 inch (25 mm) thickness of concrete or masonry.
3. Glass-fiber-reinforced concrete panels of a minimum thickness of $^3/_8$ inch (9.5 mm).
4. Metal-faced panels having minimum 0.019-inch-thick (0.48 mm) aluminum or 0.016-inch-thick (0.41 mm) corrosion-resistant steel outer facings.
5. A minimum $^7/_8$ inch (22.2 mm) thickness of stucco complying with Section 2510.

2603.6 Roofing. Foam plastic insulation meeting the requirements of Sections 2603.2, 2603.3 and 2603.4 shall be permitted as part of a roof-covering assembly, provided the assembly

with the foam plastic insulation is a Class A, B or C roofing assembly where tested in accordance with ASTM E 108 or UL 790.

2603.7 Plenums. Foam plastic insulation shall not be used as interior wall or ceiling finish in plenums except as permitted in Section 2604 or when protected by a thermal barrier in accordance with Section 2603.4.

2603.8 Protection against termites. In areas where the probability of termite infestation is very heavy in accordance with Figure 2603.8, extruded and expanded polystyrene, polyisocyanurate and other foam plastics shall not be installed on the exterior face or under interior or exterior foundation walls or slab foundations located below grade. The clearance between foam plastics installed above grade and exposed earth shall be at least 6 inches (152 mm).

Exceptions:

1. Buildings where the structural members of walls, floors, ceilings and roofs are entirely of noncombustible materials or preservative-treated wood.
2. An approved method of protecting the foam plastic and structure from subterranean termite damage is provided.
3. On the interior side of basement walls.

2603.9 Special approval. Foam plastic shall not be required to comply with the requirements of Sections 2603.4 through 2603.7 where specifically approved based on large-scale tests such as, but not limited to, NFPA 286 (with the acceptance criteria of Section 803.2), FM 4880, UL 1040 or UL 1715. Such testing shall be related to the actual end-use configuration and be performed on the finished manufactured foam plastic assembly in the maximum thickness intended for use. Foam plastics that are used as interior finish on the basis of special tests shall also conform to the flame spread requirements of Chapter 8. Assemblies tested shall include seams, joints and other typical details used in the installation of the assembly and shall be tested in the manner intended for use.

SECTION 2604
INTERIOR FINISH AND TRIM

2604.1 General. Plastic materials installed as interior finish or *trim* shall comply with Chapter 8. Foam plastics shall only be installed as interior finish where approved in accordance with the special provisions of Section 2603.9. Foam plastics that are used as interior finish shall also meet the flame-spread index requirements for interior finish in accordance with Chapter 8. Foam plastics installed as interior *trim* shall comply with Section 2604.2.

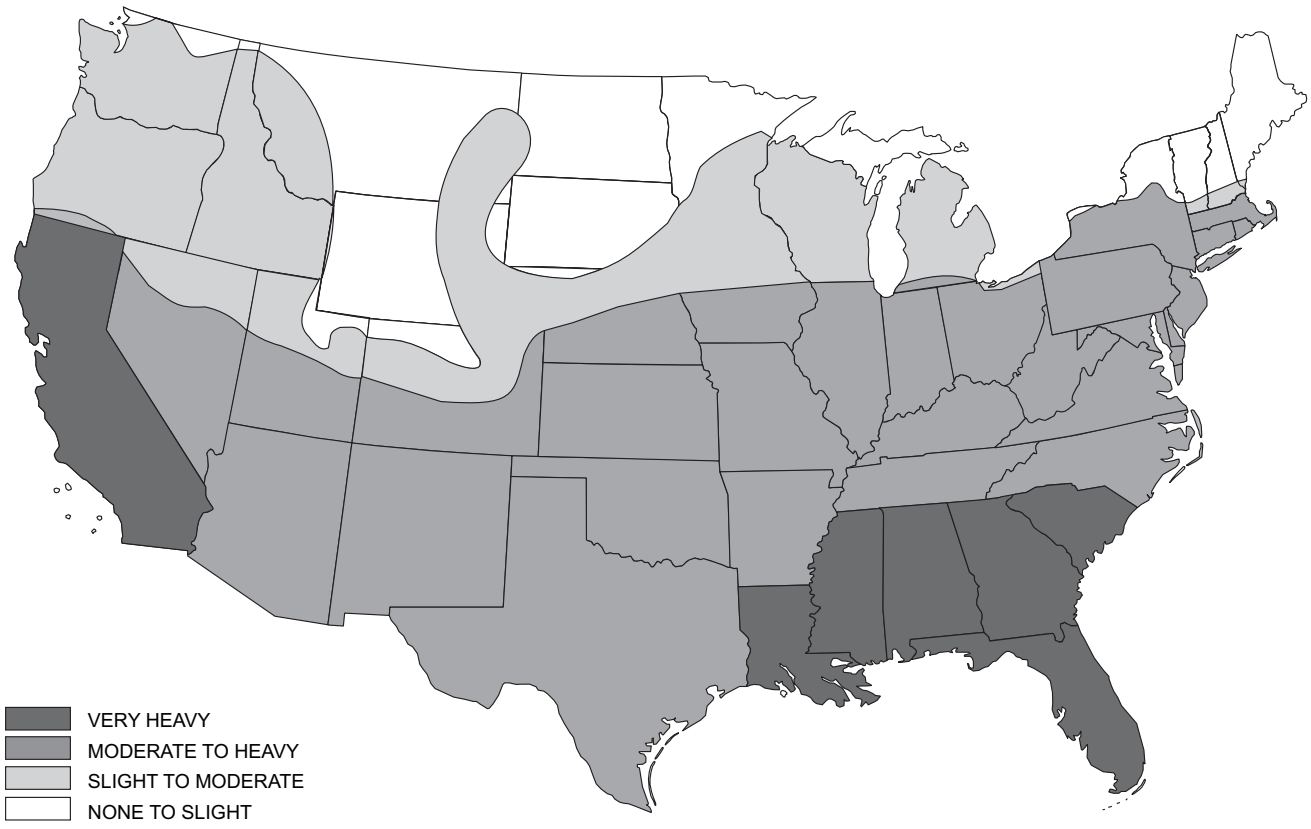


FIGURE 2603.8
TERMITE INFESTATION PROBABILITY MAP

CALIFORNIA BUILDING CODE-MATRIX ADOPTION TABLE
CHAPTER 30 – ELEVATORS AND CONVEYING SYSTEMS

Adopting agency	BSC	SFM	HCD			DSA			OSHPD				CSA	DPH	AGR	DWR	CEC	CA	SL	SLC
			1	2	1-AC	AC	SS	SS/CC	1	2	3	4								
Adopt entire chapter	**X**						**X**	**X**		**X**	**X**	**X**								
Adopt entire chapter as amended (amended sections listed below)		**X**							**X**											
Adopt only those sections that are listed below			**X**	**X**	**X**	**X**														
Chapter/Section																				
3001.1			X	X	X															
3001.1 w/Exception						X														
3001.2		X																		
3001.3			X	X	X	X														
3001.4		X																		
3001.5		X																		
3002.4a – 3002.4.7a		X																		
3002.5		X																		
3002.9 – 3002.9.5		X																		
3003.2 – 3003.2.1.2		X																		
3004.1		X																		
3004.3.1		X																		
3006.4.1		X																		
3006.5		X																		
3007.1		X																		
3008.2		X																		
3008.3		X																		
3008.6.1		X																		
3008.12		X																		
3008.14.1		X																		
3009									X											

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

CHAPTER 30
ELEVATORS AND CONVEYING SYSTEMS

SECTION 3001
GENERAL

3001.1 Scope. This chapter governs the design, construction, installation, *alteration* and repair of elevators and conveying systems and their components.

Exception: [DSA-AC & HCD 1-AC] *For accessibility requirements for platform (wheelchair) lifts and elevators, see California Code of Regulations, Title 8 and Title 24, Part 2, Sections 1124A and 1116B.*

3001.2 Referenced standards. Except as otherwise provided for in this code, the design, construction, installation, *alteration*, repair and maintenance of elevators and conveying systems and their components shall conform to *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders,* ASME A90.1, ASME B20.1, ALI ALCTV, and ASCE 24 for construction in flood hazard areas established in Section 1612.3.

3001.3 Accessibility. Passenger elevators *and platform (wheelchair) lifts* required to be *accessible* by *Chapter 11A or 11B* shall conform to *Chapter 11A for applications listed in Section 1.8.2.1.2 regulated by the Department of Housing and Community Development or Chapter 11B for applications listed in Section 1.9.1 regulated by the Division of the State Architect-Access Compliance.*

3001.4 Change in use. A change in use of an elevator from freight to passenger, passenger to freight, or from one freight class to another freight class shall comply with *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.*

3001.5 Elevators utilized to transport hazardous materials. *Elevators utilized to transport hazardous materials shall also comply with California Fire Code Section 2703.10.4.*

SECTION 3002
HOISTWAY ENCLOSURES

3002.1 Hoistway enclosure protection. Elevator, dumbwaiter and other hoistway enclosures shall be shaft enclosures complying with Section 708.

3002.1.1 Opening protectives. Openings in hoistway enclosures shall be protected as required in Chapter 7.

Exception: The elevator car doors and the associated hoistway enclosure doors at the floor level designated for recall in accordance with Section 3003.2 shall be permitted to remain open during Phase I Emergency Recall Operation.

3002.1.2 Hardware. Hardware on opening protectives shall be of an *approved* type installed as tested, except that *approved* interlocks, mechanical locks and electric contacts, door and gate electric contacts and door-operating mechanisms shall be exempt from the fire test requirements.

3002.2 Number of elevator cars in a hoistway. Where four or more elevator cars serve all or the same portion of a building, the elevators shall be located in at least two separate hoistways. Not more than four elevator cars shall be located in any single hoistway enclosure.

3002.3 Emergency signs. An *approved* pictorial sign of a standardized design shall be posted adjacent to each elevator call station on all floors instructing occupants to use the *exit stairways* and not to use the elevators in case of fire. The sign shall read: IN FIRE EMERGENCY, DO NOT USE ELEVATOR. USE EXIT STAIRS.

Exceptions:

1. The emergency sign shall not be required for elevators that are part of an *accessible means of egress* complying with Section 1007.4.
2. The emergency sign shall not be required for elevators that are used for occupant self-evacuation in accordance with Section 3008.

3002.4 Elevator car to accommodate ambulance stretcher. Where elevators are provided in buildings four or more *stories* above, or four or more *stories* below, *grade plane*, at least one elevator shall be provided for fire department emergency access to all floors. The elevator car shall be of such a size and arrangement to accommodate an ambulance stretcher 24 inches by 84 inches (610 mm by 2134 mm) with not less than 5-inch (127 mm) radius corners, in the horizontal, open position and shall be identified by the international symbol for emergency medical services (star of life). The symbol shall not be less than 3 inches (76 mm) high and shall be placed inside on both sides of the hoistway door frame.

The following California sections replace the corresponding model code section for applications specified in Section 1.11 for the Office of the State Fire Marshal.

3002.4a General **Stretcher Requirements.** *All buildings and structures with one or more passenger service elevators shall be provided with not less than one medical emergency service elevator to all landings meeting the provisions of Section 3002.4a.*

Exceptions:

1. *Elevators in structures used only by maintenance and operating personnel.*
2. *Elevators in jails and penal institutions.*
3. *Elevators in buildings or structures where each landing is at ground level or is accessible at grade level or by a ramp.*
4. *Elevator(s) in two-story buildings or structures equipped with stairs of a configuration that will accommodate the carrying of the gurney or stretcher as permitted by the local jurisdictional authority.*

5. *Elevators in buildings or structures less than four stories in height for which the local jurisdictional authority has granted an exception in the form of a written document.*

3002.4.1a Gurney size. *The medical emergency service elevator shall accommodate the loading and transport of an ambulance gurney or stretcher [maximum size 24 inches by 84 inches (610 mm by 2134 mm) with not less than 5-inch (127 mm) radius corners] in the horizontal position.*

3002.4.2a Hoistway doors. *The hoistway landing openings shall be provided with power-operated doors.*

3002.4.3a Elevator entrance openings and car size. *The elevator car shall be of such a size and arrangement to accommodate a 24-inch by 84-inch (610 mm by 2134 mm) ambulance gurney or stretcher with not less than 5-inch (127 mm) radius corners, in the horizontal, open position, shall be provided with a minimum clear distance between walls or between walls and door excluding return panels not less than 80 inches by 54 inches (2032 mm by 1372 mm), and a minimum distance from wall to return panel not less than 51 inches (1295 mm) with a 42-inch (1067 mm) side slide door.*

Exception: *The elevator car dimensions and/or the clear entrance opening dimensions may be altered where it can be demonstrated to the local jurisdictional authority's satisfaction that the proposed configuration will handle the designated gurney or stretcher with equivalent ease. Documentation from the local authority shall be provided to the Occupational Safety and Health Standards Board.*

3002.4.4a Elevator recall. *The elevator(s) designated the medical emergency elevator shall be equipped with a key switch to recall the elevator nonstop to the main floor. For the purpose of this section, elevators in compliance with Section 3003.2 shall be acceptable.*

3002.4.5a Designation. *Medical emergency elevators shall be identified by the international symbol (Star of Life) for emergency medical services.*

3002.4.6a Symbol size. *The symbol shall not be less than 3 inches (76 mm) in size.*

3002.4.7a Symbol location*. A symbol shall be permanently attached to each side of the hoistway door frame on the portion of the frame at right angles to the hallway or landing area. Each symbol shall be not less than 78 inches (1981 mm) and not more than 84 inches (2134 mm) above the floor level at the threshold.*

3002.5 Emergency doors. *Emergency doors in blind hoistways as described in ASME A17.1-2004, Section 2.11.1.2, and access panels as described in ASME A17.1-2004, Section 2.11.1.4, are prohibited in accordance with California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.*

3002.6 Prohibited doors. Doors, other than hoistway doors and the elevator car door, shall be prohibited at the point of access to an elevator car unless such doors are readily openable from the car side without a key, tool, special knowledge or effort.

3002.7 Common enclosure with stairway. Elevators shall not be in a common shaft enclosure with a *stairway.*

Exception: *Open parking garages.*

3002.8 Glass in elevator enclosures. Glass in elevator enclosures shall comply with Section 2409.1.

3002.9 Photoelectric tube bypass switch.

3002.9.1 *Elevators equipped with photoelectric tube devices which control the closing of automatic, power-operated car or hoistway doors, or both, shall have a switch in the car which, when actuated, will render the photoelectric tube device ineffective.*

3002.9.2 *The switch shall be constant-pressure type, requiring not less than 10 pounds (44.5N) or more than 15 pounds (66.7 N) pressure to actuate.*

3002.9.3 *The switch shall be located not less than 6 feet (1829 mm) or more than 6 feet 6 inches (1981 mm) above the car floor and shall be located in or adjacent to the operating panel.*

3002.9.4 *The switch shall be clearly labeled* TO BE USED IN CASE OF FIRE ONLY.

3002.9.5 *Switches shall be kept in working order or be removed when existing installations are arranged to comply with Section 3002.9.5, Exception 1 or 2.*

Exceptions:

1. *Elevators installed and maintained in compliance with Section 3003.*
2. *Where alternate means acceptable to the fire authority having jurisdiction are provided that will ensure the doors can close under adverse smoke conditions.*

[F] SECTION 3003 EMERGENCY OPERATIONS

[F] 3003.1 Standby power. In buildings and structures where standby power is required or furnished to operate an elevator, the operation shall be in accordance with Sections 3003.1.1 through 3003.1.4.

[F] 3003.1.1 Manual transfer. Standby power shall be manually transferable to all elevators in each bank.

[F] 3003.1.2 One elevator. Where only one elevator is installed, the elevator shall automatically transfer to standby power within 60 seconds after failure of normal power.

[F] 3003.1.3 Two or more elevators. Where two or more elevators are controlled by a common operating system, all elevators shall automatically transfer to standby power within 60 seconds after failure of normal power where the standby power source is of sufficient capacity to operate all elevators at the same time. Where the standby power source is not of sufficient capacity to operate all elevators at the same time, all elevators shall transfer to standby power in sequence, return to the designated landing and disconnect from the standby power source. After all elevators have been returned to the designated level, at least one elevator shall remain operable from the standby power source.

[F] 3003.1.4 Venting. Where standby power is connected to elevators, the machine room ventilation or air conditioning shall be connected to the standby power source.

[F] 3003.2 Fire-fighters' emergency operation. Elevators shall be provided with Phase I emergency recall operation and Phase II emergency in-car operation in accordance with *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.*

3003.2.1 Floor numbers. *Elevator hoistways shall have a floor number not less than 4 inches (102 mm) in height, placed on the walls and/or doors of the hoistway at intervals such that a person in a stalled elevator, upon opening the car door, can determine the floor position.*

3003.2.1.1 Fire signs. *All automatic elevators shall have not less than one sign at each landing printed on a contrasting background in letters not less than $^1/_2$ inch (12.7 mm) high to read: IN CASE OF FIRE USE STAIRWAY FOR EXIT. DO NOT USE ELEVATOR.*

3003.2.1.2 Call and car operation buttons. *Automatic passenger elevators shall have call and car operation buttons within 60 inches (1524 mm) of the floor. Emergency telephones shall also be within 60 inches (1524 mm) of the floor.*

SECTION 3004
HOISTWAY VENTING

3004.1 Vents required. Hoistways of elevators and dumbwaiters penetrating more than three *stories* shall be provided with a means for venting smoke and hot gases to the outer air in case of fire.

Exceptions:

1. In occupancies of other than Groups R-1, R-2, *R-2.1*, I-2 and similar occupancies with overnight *sleeping units*, venting of hoistways is not required where the building is equipped throughout with an *approved automatic sprinkler system* installed in accordance with Section 903.3.1.1 or 903.3.1.2.
2. Sidewalk elevator hoistways are not required to be vented.
3. Elevators contained within and serving *open parking garages* only.
4. Elevators within individual residential *dwelling units*.

3004.2 Location of vents. Vents shall be located at the top the hoistway and shall open either directly to the outer air or through noncombustible ducts to the outer air. Noncombustible ducts shall be permitted to pass through the elevator machine room, provided that portions of the ducts located outside the hoistway or machine room are enclosed by construction having not less than the *fire-resistance rating* required for the hoistway. Holes in the machine room floors for the passage of ropes, cables or other moving elevator equipment shall be limited as not to provide greater than 2 inches (51 mm) of clearance on all sides.

3004.3 Area of vents. Except as provided for in Section 3004.3.1, the area of the vents shall not be less than $3^1/_2$ percent of the area of the hoistway nor less than 3 square feet (0.28 m^2) for each elevator car, and not less than $3^1/_2$ percent nor less than 0.5 square feet (0.047 m^2) for each dumbwaiter car in the hoistway, whichever is greater. Of the total required vent area, not less than one-third shall be permanently open. Closed portions of the required vent area shall consist of openings glazed with annealed glass not greater than $^1/_8$ inch (3.2 mm) in thickness.

Exception: The total required vent area shall not be required to be permanently open where all the vent openings automatically open upon detection of smoke in the elevator lobbies or hoistway, upon power failure and upon activation of a manual override control. The manual override control shall be capable of opening and closing the vents and shall be located in an *approved* location.

3004.3.1 Reduced vent area. Where mechanical ventilation conforming to the *California Mechanical Code* is provided, a reduction in the required vent area is allowed provided that all of the following conditions are met:

1. The occupancy is not in Group R-1, R-2, *R-2.1* or I-2 or of a similar occupancy with overnight *sleeping units*.
2. The vents required by Section 3004.2 do not have outside exposure.
3. The hoistway does not extend to the top of the building.
4. The hoistway and machine room exhaust fan is automatically reactivated by thermostatic means.
5. Equivalent venting of the hoistway is accomplished.

3004.4 Plumbing and mechanical systems. Plumbing and mechanical systems shall not be located in an elevator shaft.

Exception: Floor drains, sumps and sump pumps shall be permitted at the base of the shaft provided they are indirectly connected to the plumbing system.

SECTION 3005
CONVEYING SYSTEMS

3005.1 General. Escalators, moving walks, conveyors, personnel hoists and material hoists shall comply with the provisions of this section.

3005.2 Escalators and moving walks. Escalators and moving walks shall be constructed of *approved* noncombustible and fire-retardant materials. This requirement shall not apply to electrical equipment, wiring, wheels, handrails and the use of $^1/_{28}$-inch (0.9 mm) wood veneers on balustrades backed up with noncombustible materials.

3005.2.1 Enclosure. Escalator floor openings shall be enclosed with shaft enclosures complying with Section 708.

3005.2.2 Escalators. Where provided in below-grade transportation stations, escalators shall have a clear width of 32 inches (815 mm) minimum.

Exception: The clear width is not required in existing facilities undergoing *alterations*.

3005.3 Conveyors. Conveyors and conveying systems shall comply with ASME B20.1.

3005.3.1 Enclosure. Conveyors and related equipment connecting successive floors or levels shall be enclosed with shaft enclosures complying with Section 708.

3005.3.2 Conveyor safeties. Power-operated conveyors, belts and other material-moving devices shall be equipped with automatic limit switches which will shut off the power in an emergency and automatically stop all operation of the device.

3005.4 Personnel and material hoists. Personnel and material hoists shall be designed utilizing an *approved* method that accounts for the conditions imposed during the intended operation of the hoist device. The design shall include, but is not limited to, anticipated loads, structural stability, impact, vibration, stresses and seismic restraint. The design shall account for the construction, installation, operation and inspection of the hoist tower, car, machinery and control equipment, guide members and hoisting mechanism. Additionally, the design of personnel hoists shall include provisions for field testing and maintenance which will demonstrate that the hoist device functions in accordance with the design. Field tests shall be conducted upon the completion of an installation or following a major *alteration* of a personnel hoist.

SECTION 3006
MACHINE ROOMS

3006.1 Access. An *approved* means of access shall be provided to elevator machine rooms and overhead machinery spaces.

3006.2 Venting. Elevator machine rooms that contain solid-state equipment for elevator operation shall be provided with an independent ventilation or air-conditioning system to protect against the overheating of the electrical equipment. The system shall be capable of maintaining temperatures within the range established for the elevator equipment.

3006.3 Pressurization. The elevator machine room serving a pressurized elevator hoistway shall be pressurized upon activation of a heat or smoke detector located in the elevator machine room.

3006.4 Machine rooms and machinery spaces. Elevator machine rooms and machinery spaces shall be enclosed with *fire barriers* constructed in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 712, or both. The *fire-resistance rating* shall not be less than the required rating of the hoistway enclosure served by the machinery. Openings in the *fire barriers* shall be protected with assemblies having a *fire protection rating* not less than that required for the hoistway enclosure doors.

Exceptions:

1. Where machine rooms and machinery spaces do not abut and have no openings to the hoistway enclosure they serve the *fire barriers* constructed in accordance with Section 707 or *horizontal assemblies* constructed in accordance with Section 712, or both, shall be permitted to be reduced to a 1-hour *fire-resistance rating*.
2. In buildings four *stories* or less above *grade plane* when machine room and machinery spaces do not abut and have no openings to the hoistway enclosure they serve, the machine room and machinery spaces are not required to be fire-resistance rated.

3006.4.1 Automatic sprinkler system. *Automatic sprinklers shall not be required to be installed in the elevator hoistway, elevator machine room, elevator machinery space, elevator control space or elevator control room where all the following are met:*

1. *Approved smoke detectors shall be installed in the elevator hoistway, elevator machine room, elevator machinery spaces, elevator control spaces or elevator control rooms and connected to the building fire alarm system in accordance with Section 907.*
2. *Activation of any smoke detector located in the elevator hoistway, elevator machine room, elevator machinery space, elevator control space or elevator control room shall cause the actuation of the building fire alarm notification appliances in accordance with Section 907.*
3. *Activation of any smoke detector located in the elevator hoistway, elevator machine room, elevator machinery space, elevator control space or elevator control room shall cause all elevators having any equipment located in that elevator hoistway, elevator machine room, elevator machinery space, elevator control space or elevator control room to recall nonstop to the appropriate designated floor in accordance with CCR Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.*
4. *The elevator machine room, elevator machinery space, elevator control space or elevator control room shall be enclosed with fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 712, or both. The fire-resistance rating shall not be less than the required rating of the hoistway enclosure served by the machinery. Openings in the fire barriers shall be protected with assemblies having a fire protection rating not less than that required for the hoistway enclosure doors. The exceptions to Section 3006.4 shall not apply.*
5. *The building fire alarm system shall be monitored by an approved supervising station in accordance with Section 907.*
6. *An approved sign shall be permanently displayed in the elevator machine room, elevator machinery space, elevator control space or elevator control room in a conspicuous location with a minimum of $1^1/_2$ inch letters on a contrasting background, stating:*

NO COMBUSTIBLE STORAGE
PERMITTED IN THIS ROOM
By Order of the Fire Marshal [or name of fire authority]

3006.5 Shunt trip. Where elevator hoistways or elevator machine rooms containing elevator control equipment are protected with automatic sprinklers, a means installed in accordance with NFPA 72, Section *21.4*, Elevator Shutdown, shall be provided to disconnect automatically the main line power supply to the affected elevator prior to the application of water. This means shall not be self-resetting. The activation of sprin-

klers outside the hoistway or machine room shall not disconnect the main line power supply.

3006.6 Plumbing systems. Plumbing systems shall not be located in elevator equipment rooms.

SECTION 3007
FIRE SERVICE ACCESS ELEVATOR

3007.1 General. Where required by Section 403.6.1, every floor of the building shall be served by a fire service access elevator. Except as modified in this section, the fire service access elevator shall be installed in accordance with this chapter and *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.*

3007.2 Hoistway enclosures protection. The fire service access elevator shall be located in a shaft enclosure complying with Section 708.

3007.3 Hoistway lighting. When firefighters' emergency operation is active, the entire height of the hoistway shall be illuminated at not less than 1 foot-candle (11 lux) as measured from the top of the car of each fire service access elevator.

3007.4 Fire service access elevator lobby. The fire service access elevator shall open into a fire service access elevator lobby in accordance with Sections 3007.4.1 through 3007.4.4.

Exception: Where a fire service access elevator has two entrances onto a floor, the second entrance shall be permitted to open into an elevator lobby in accordance with Section 708.14.1.

3007.4.1 Access. The fire service access elevator lobby shall have direct access to an *exit enclosure*.

3007.4.2 Lobby enclosure. The fire service access elevator lobby shall be enclosed with a *smoke barrier* having a minimum 1-hour *fire-resistance rating*, except that lobby doorways shall comply with Section 3007.4.3.

Exception: Enclosed fire service access elevator lobbies are not required at the street floor.

3007.4.3 Lobby doorways. Each fire service access elevator lobby shall be provided with a doorway that is protected with a $^3/_4$-hour *fire door assembly* complying with Section 715.4. The *fire door assembly* shall also comply with the smoke and draft control door assembly requirements of Section 715.4.3.1 with the UL 1784 test conducted without the artificial bottom seal.

3007.4.4 Lobby size. Each enclosed fire service access elevator lobby shall be a minimum of 150 square feet (14 m^2) in an area with a minimum dimension of 8 feet (2440 mm).

3007.5 Standpipe hose connection. A Class I standpipe hose connection in accordance with Section 905 shall be provided in the *exit enclosure* having direct access from the fire service access elevator lobby.

3007.6 Elevator system monitoring. The fire service access elevator shall be continuously monitored at the fire command center by a standard emergency service interface system meeting the requirements of NFPA 72.

3007.7 Electrical power. The following features serving each fire service access elevator shall be supplied by both normal power and Type 60/Class 2/Level 1 standby power:

1. Elevator equipment.
2. Elevator hoistway lighting.
3. Elevator machine room ventilation and cooling equipment.
4. Elevator controller cooling equipment.

3007.7.1 Protection of wiring or cables. Wires or cables that provide normal and standby power, control signals, communication with the car, lighting, heating, air conditioning, ventilation and fire-detecting systems to fire service access elevators shall be protected by construction having a minimum 1-hour *fire-resistance rating* or shall be circuit integrity cable having a minimum 1-hour *fire-resistance rating*.

SECTION 3008
OCCUPANT EVACUATION ELEVATORS

3008.1 General. Where elevators are to be used for occupant self-evacuation during fires, all passenger elevators for general public use shall comply with this section. Where other elevators are used for occupant self-evacuation, they shall also comply with this section.

3008.2 Fire safety and evacuation plan. The building shall have an *approved* fire safety and evacuation plan in accordance with the applicable requirements of Section 404 of the *California Fire Code*. The fire safety and evacuation plan shall incorporate specific procedures for the occupants using evacuation elevators.

3008.3 Operation. The occupant evacuation elevators shall be used for occupant self-evacuation only in the normal elevator operating mode prior to Phase I Emergency Recall Operation in accordance with the requirements in *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders* and the building's fire safety and evacuation plan.

3008.4 Additional exit stairway. Where an additional *means of egress* is required in accordance with Section 403.5.2, an additional *exit stairway* shall not be required to be installed in buildings having elevators used for occupant self-evacuation in accordance with this section.

3008.5 Emergency voice/alarm communication system. The building shall be provided with an emergency voice/alarm communication system. The emergency voice/alarm communication system shall be accessible to the fire department. The system shall be provided in accordance with Section 907.5.2.2.

3008.5.1 Notification appliances. A minimum of one audible and one visible notification appliance shall be installed within each occupant evacuation elevator lobby.

3008.6 Automatic sprinkler system. The building shall be protected throughout by an *approved*, electrically-supervised automatic sprinkler system in accordance with Section 903.3.1.1, except as otherwise permitted by Section 903.3.1.1.1 and as prohibited by Section 3008.6.1.

3008.6.1 Prohibited locations. Automatic sprinklers shall not be installed in elevator machine rooms and elevator machine spaces for occupant evacuation elevators *in accordance with this Section and Section 3006.4.1.*

3008.6.2 Sprinkler system monitoring. The sprinkler system shall have a sprinkler control valve supervisory switch and waterflow-initiating device provided for each floor that is monitored by the building's fire alarm system.

3008.7 High-hazard content areas. No building areas shall contain high-hazard contents exceeding the maximum allowable quantities per *control area* as addressed in Section 414.2.

3008.8 Shunt trip. Means for elevator shutdown in accordance with Section 3006.5 shall not be installed on elevator systems used for occupant evacuation elevators.

3008.9 Hoistway enclosure protection. The occupant evacuation elevators shall be located in hoistway enclosure(s) complying with Section 708.

3008.10 Water protection. The occupant evacuation elevator hoistway shall be designed utilizing an *approved* method to prevent water from the operation of the *automatic sprinkler system* from infiltrating into the hoistway enclosure.

3008.11 Occupant evacuation elevator lobby. The occupant evacuation elevators shall open into an elevator lobby in accordance with Sections 3008.11.1 through 3008.11.5.

3008.11.1 Access. The occupant evacuation elevator lobby shall have direct access to an *exit enclosure*.

3008.11.2 Lobby enclosure. The occupant evacuation elevator lobby shall be enclosed with a *smoke barrier* having a minimum 1-hour *fire-resistance rating*, except that lobby doorways shall comply with Section 3008.11.3.

Exception: Enclosed occupant evacuation elevator lobbies are not required at the level(s) of *exit discharge*.

3008.11.3 Lobby doorways. Each occupant evacuation elevator lobby shall be provided with a doorway that is protected with a $^3/_4$-hour *fire door assembly* complying with Section 715.4.

3008.11.3.1 Vision panel. A vision panel shall be installed in each *fire door assembly* protecting the lobby doorway. The vision panel shall consist of fire-protection-rated glazing and shall be located to furnish clear vision of the occupant evacuation elevator lobby.

3008.11.3.2 Door closing. Each *fire door assembly* protecting the lobby doorway shall be automatic-closing upon receipt of any fire alarm signal from the emergency voice/alarm communication system serving the building.

3008.11.4 Lobby size. Each occupant evacuation elevator lobby shall have minimum floor area as follows:

1. The occupant evacuation elevator lobby floor area shall accommodate, at 3 square feet (0.28 m^2) per person, a minimum of 25 percent of the *occupant load* of the floor area served by the lobby.
2. The occupant evacuation elevator lobby floor area also shall accommodate one *wheelchair space* of 30 inches by 48 inches (760 mm by 1220 mm) for each 50 persons, or portion thereof, of the *occupant load* of the floor area served by the lobby.

Exception: The size of lobbies serving multiple banks of elevators shall have the minimum floor area *approved* on an individual basis and shall be consistent with the building's fire safety and evacuation plan.

3008.11.5 Signage. An *approved* sign indicating elevators are suitable for occupant self-evacuation shall be posted on all floors adjacent to each elevator call station serving occupant evacuation elevators.

3008.12 Lobby status indicator. Each occupant evacuation elevator lobby shall be equipped with a status indicator arranged to display all of the following information:

1. An illuminated green light and the message, "Elevators available for occupant evacuation" when the elevators are operating in normal service and the fire alarm system is indicating an alarm in the building.
2. An illuminated red light and the message, "Elevators out of service, use exit stairs" when the elevators are in Phase I emergency recall operation *or Phase II firefighters' emergency operation* in accordance with the requirements in *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.*
3. No illuminated light or message when the elevators are operating in normal service.

3008.13 Two-way communication system. A two-way communication system shall be provided in each occupant evacuation elevator lobby for the purpose of initiating communication with the fire command center or an alternative location *approved* by the fire department.

3008.13.1 Design and installation. The two-way communication system shall include audible and visible signals and shall be designed and installed in accordance with the requirements of ICC A117.1.

3008.13.2 Instructions. Instructions for the use of the two-way communication system along with the location of the station shall be permanently located adjacent to each station. Signage shall comply with the ICC A117.1 requirements for visual characters.

3008.14 Elevator system monitoring. The occupant evacuation elevators shall be continuously monitored at the fire command center or a central control point *approved* by the fire department and arranged to display all of the following information:

1. Floor location of each elevator car.
2. Direction of travel of each elevator car.
3. Status of each elevator car with respect to whether it is occupied.
4. Status of normal power to the elevator equipment, elevator controller cooling equipment, and elevator machine room ventilation and cooling equipment.

5. Status of standby or emergency power system that provides backup power to the elevator equipment, elevator controller cooling equipment, and elevator machine room ventilation and cooling equipment.
6. Activation of any fire alarm-initiating device in any elevator lobby, elevator machine room or machine space, or elevator hoistway.

3008.14.1 Elevator recall. The fire command center or an alternative location *approved* by the fire department shall be provided with the means to manually initiate a Phase I Emergency Recall of the occupant evacuation elevators in accordance with *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.*

3008.15 Electrical power. The following features serving each occupant evacuation elevator shall be supplied by both normal power and Type 60/Class 2/Level 1 standby power:

1. Elevator equipment.
2. Elevator machine room ventilation and cooling equipment.
3. Elevator controller cooling equipment.

3008.15.1 Protection of wiring or cables. Wires or cables that provide normal and standby power, control signals, communication with the car, lighting, heating, air conditioning, ventilation and fire-detecting systems to occupant evacuation elevators shall be protected by construction having a minimum 1-hour *fire-resistance rating* or shall be circuit integrity cable having a minimum 1-hour *fire-resistance rating*.

SECTION 3009
SPECIAL REQUIREMENTS FOR ELEVATORS IN HOSPITALS

3009.1 General. [OSHPD 1] *In hospital buildings, all elevators shall comply with the provisions of this section.*

3009.1.1 Seismic switch. *The seismic switch, as required by ASME A 17.1, shall be connected to the essential electrical system.*

3009.1.2 Annunciator. *Either a visible or an audible annunciator shall be connected to the essential electrical system and be located in the elevator machine room. The annunciator will indicate if the seismic switch is inoperative due to a loss of power. If a visual annunciator is used, it shall be clearly visible in the room.*

3009.1.3 Travel speed. *After a seismic switch has been triggered, the elevator shall have the ability to operate at a "go slow" speed until the elevator can be inspected. "Go slow" speed is defined as a travel speed of not more than 150 feet per minute (45.72 meters per minute).*

3009.1.4 Cable-operated elevators. *For cable-operated elevators, an additional sensor switch shall be installed on the governor rope/sheave. The sensor shall prevent car movement when the governor tail sheave is dislodged from its normal position.*

CHAPTER 31
SPECIAL CONSTRUCTION

SECTION 3101
GENERAL

3101.1 Scope. The provisions of this chapter shall govern special building construction including membrane structures, temporary structures, *pedestrian walkways* and tunnels, automatic vehicular gates, *awnings* and canopies, marquees, signs, and towers and antennas.

SECTION 3102
MEMBRANE STRUCTURES

3102.1 General. The provisions of this section shall apply to air-supported, air-inflated, membrane-covered cable and membrane-covered frame structures, collectively known as membrane structures, erected for a period of 180 days or longer. Those erected for a shorter period of time shall comply with the *California Fire Code*. Membrane structures covering water storage facilities, water clarifiers, water treatment plants, sewage treatment plants, greenhouses and similar facilities not used for human occupancy are required to meet only the requirements of Sections 3102.3.1 and 3102.7. Membrane structures erected on a building, balcony, deck or other structure for any period of time shall comply with this section.

3102.2 Definitions. The following words and terms shall, for the purposes of this section and as used elsewhere in this code, have the meanings shown herein.

AIR-INFLATED STRUCTURE. A structure that uses air-pressurized membrane beams, arches or other elements to enclose space. Occupants of such a structure do not occupy the pressurized area used to support the structure.

AIR-SUPPORTED STRUCTURE. A building wherein the shape of the structure is attained by air pressure and occupants of the structure are within the elevated pressure area. Air-supported structures are of two basic types:

Double skin. Similar to a single skin, but with an attached liner that is separated from the outer skin and provides an airspace which serves for insulation, acoustic, aesthetic or similar purposes.

Single skin. Where there is only the single outer skin and the air pressure is directly against that skin.

CABLE-RESTRAINED, AIR-SUPPORTED STRUCTURE. A structure in which the uplift is resisted by cables or webbings which are anchored to either foundations or dead men. Reinforcing cable or webbing is attached by various methods to the membrane or is an integral part of the membrane. This is not a cable-supported structure.

MEMBRANE-COVERED CABLE STRUCTURE. A nonpressurized structure in which a mast and cable system provides support and tension to the membrane weather barrier and the membrane imparts stability to the structure.

MEMBRANE-COVERED FRAME STRUCTURE. A nonpressurized building wherein the structure is composed of a rigid framework to support a tensioned membrane which provides the weather barrier.

NONCOMBUSTIBLE MEMBRANE STRUCTURE. A membrane structure in which the membrane and all component parts of the structure are noncombustible.

3102.3 Type of construction. Noncombustible membrane structures shall be classified as Type IIB construction. Noncombustible frame or cable-supported structures covered by an *approved* membrane in accordance with Section 3102.3.1 shall be classified as Type IIB construction. Heavy timber frame-supported structures covered by an *approved* membrane in accordance with Section 3102.3.1 shall be classified as Type IV construction. Other membrane structures shall be classified as Type V construction.

Exception: Plastic less than 30 feet (9144 mm) above any floor used in greenhouses, where occupancy by the general public is not authorized, and for aquaculture pond covers is not required to meet the fire propagation performance criteria of NFPA 701.

3102.3.1 Membrane and interior liner material. Membranes and interior liners shall be either noncombustible as set forth in Section 703.4 or *shall be flame resistant in accordance with appropriate standards set forth in CCR, Title 19, Division 1, Chapter 8. Tops and sidewalls shall be made either from fabric which has been flame resistant treated with an approved exterior chemical process by an approved application concern, or from inherently flame resistant fabric approved and listed by the State Fire Marshal (see CCR, Title 19, Division 1, Chapter 8).* <

Exception: Plastic less than 20 mil (0.5 mm) in thickness used in greenhouses, where occupancy by the general public is not authorized, and for aquaculture pond covers is not required to meet the fire propagation performance criteria of NFPA 701.

3102.4 Allowable floor areas. The area of a membrane structure shall not exceed the limitations set forth in Table 503, except as provided in Section 506.

3102.5 Maximum height. Membrane structures shall not exceed one *story* nor shall such structures exceed the height limitations in feet set forth in Table 503.

Exception: Noncombustible membrane structures serving as roofs only.

3102.6 Mixed construction. Membrane structures shall be permitted to be utilized as specified in this section as a portion of buildings of other types of construction. Height and area

limits shall be as specified for the type of construction and occupancy of the building.

3102.6.1 Noncombustible membrane. A noncombustible membrane shall be permitted for use as the roof or as a skylight of any building or atrium of a building of any type of construction provided it is at least 20 feet (6096 mm) above any floor, balcony or gallery.

3102.6.1.1 Membrane. A membrane meeting the fire propagation performance criteria of NFPA 701 shall be permitted to be used as the roof or as a skylight on buildings of Types IIB, III, IV and V construction, provided it is at least 20 feet (6096 mm) above any floor, balcony or gallery.

3102.7 Engineering design. The structure shall be designed and constructed to sustain dead loads; loads due to tension or inflation; live loads including wind, snow or flood and seismic loads and in accordance with Chapter 16.

3102.8 Inflation systems. Air-supported and air-inflated structures shall be provided with primary and auxiliary inflation systems to meet the minimum requirements of Sections 3102.8.1 through 3102.8.3.

3102.8.1 Equipment requirements. This inflation system shall consist of one or more blowers and shall include provisions for automatic control to maintain the required inflation pressures. The system shall be so designed as to prevent overpressurization of the system.

3102.8.1.1 Auxiliary inflation system. In addition to the primary inflation system, in buildings exceeding 1,500 square feet (140 m^2) in area, an auxiliary inflation system shall be provided with sufficient capacity to maintain the inflation of the structure in case of primary system failure. The auxiliary inflation system shall operate automatically when there is a loss of internal pressure and when the primary blower system becomes inoperative.

3102.8.1.2 Blower equipment. Blower equipment shall meet all of the following requirements:

1. Blowers shall be powered by continuous-rated motors at the maximum power required for any flow condition as required by the structural design.
2. Blowers shall be provided with inlet screens, belt guards and other protective devices as required by the *building official* to provide protection from injury.
3. Blowers shall be housed within a weather-protecting structure.
4. Blowers shall be equipped with backdraft check dampers to minimize air loss when inoperative.
5. Blower inlets shall be located to provide protection from air contamination. The location of inlets shall be *approved*.

3102.8.2 Standby power. Wherever an auxiliary inflation system is required, an *approved* standby power-generating system shall be provided. The system shall be equipped with a suitable means for automatically starting the generator set upon failure of the normal electrical service and for automatic transfer and operation of all of the required electrical functions at full power within 60 seconds of such service failure. Standby power shall be capable of operating independently for a minimum of 4 hours.

3102.8.3 Support provisions. A system capable of supporting the membrane in the event of deflation shall be provided for in air-supported and air-inflated structures having an *occupant load* of 50 or more or where covering a swimming pool regardless of *occupant load*. The support system shall be capable of maintaining membrane structures used as a roof for Type I construction not less than 20 feet (6096 mm) above floor or seating areas. The support system shall be capable of maintaining other membranes at least 7 feet (2134 mm) above the floor, seating area or surface of the water.

SECTION 3103
TEMPORARY STRUCTURES

3103.1 General. The provisions of this section shall apply to structures erected for a period of less than 180 days. Tents and other membrane structures erected for a period of less than 180 days shall comply with the *California Fire Code*. Those erected for a longer period of time shall comply with applicable sections of this code.

3103.1.1 Permit required. Temporary structures that cover an area in excess of 120 square feet (11.16 m^2), including connecting areas or spaces with a common *means of egress* or entrance which are used or intended to be used for the gathering together of 10 or more persons, shall not be erected, operated or maintained for any purpose without obtaining a *permit* from the *building official*.

3103.2 Construction documents. A *permit* application and *construction documents* shall be submitted for each installation of a temporary structure. The *construction documents* shall include a site plan indicating the location of the temporary structure and information delineating the *means of egress* and the *occupant load*.

3103.3 Location. Temporary structures shall be located in accordance with the requirements of Table 602 based on the *fire-resistance rating* of the *exterior walls* for the proposed type of construction.

3103.4 Means of egress. Temporary structures shall conform to the *means of egress* requirements of Chapter 10 and shall have a maximum *exit access* travel distance of 100 feet (30 480 mm).

SECTION 3104
PEDESTRIAN WALKWAYS AND TUNNELS

3104.1 General. This section shall apply to connections between buildings such as *pedestrian walkways* or tunnels, located at, above or below grade level, that are used as a means of travel by persons. The *pedestrian walkway* shall not contribute to the *building area* or the number of *stories* or height of connected buildings.

CALIFORNIA BUILDING CODE-MATRIX ADOPTION TABLE
CHAPTER 34 – EXISTING STRUCTURES

Adopting agency	BSC	SFM	HCD			DSA			OSHPD				CSA	DPH	AGR	DWR	CEC	CA	SL	SLC
			1	2	1-AC	AC	SS	SS/CC	1	2	3	4								
Adopt entire chapter																				
Adopt entire chapter as amended (amended sections listed below)										**X**	**X**									
Adopt only those sections that are listed below	**X**	**X**	**X**	**X**		**X**	**X**	**X**												
Chapter/Section																				
3401	X																			
3401.1			X	X			X	X												
3401.1 (Last Paragraph only)						X														
3401.1.1	X																			
3401.1 – 3401.3		X																		
3401.1.2							X													
3401.1.3								X												
3401.3			X	X																
3401.4										X	X									
3401.4 – 3401.4.2		X																		
3401.4.3			X	X																
3401.5										X	X									
3401.6		X																		
3401.7	X																			
3401.8	X																			
3402	X	X																		
3402.1										X	X									
3403	X																			
3403.1		X	X	X																
3403.1 Exception	X																			
3403.1.1			X	X																
3403.2 Equation	X																			
3403.4.1		X	X	X																
3404	X																			
3404.1			X	X																
3404.1 Exception	X																			
3404.1.1			X	X																
3404.4.1			X	X																
3404.6		X																		
3405	X																			
3405.1		X	X	X																
3405.1 Exception	X																			
3405.1.1		X	X	X																
3405.1.2			X	X																
3406	X	X																		
3408	X	X																		
3409 (1st Paragraph)						X														

(continued)

CALIFORNIA BUILDING CODE-MATRIX ADOPTION TABLE
CHAPTER 34 – EXISTING STRUCTURES—continued

Adopting agency	BSC	SFM	HCD			DSA			OSHPD				CSA	DPH	AGR	DWR	CEC	CA	SL	SLC
			1	2	1-AC	AC	SS	SS/CC	1	2	3	4								
Adopt entire chapter																				
Adopt entire chapter as amended (amended sections listed below)										**X**	**X**									
Adopt only those sections that are listed below	**X**	**X**	**X**	**X**		**X**	**X**	**X**												
Chapter/Section																				
3410.1			X	X																
3410.2										X	X									
3411			†	†																
3413		X																		
3414		X																		
3415		X																		
3416		X																		
3417	X						X	X												
3418	X						X	X												
3419	X						X	X												
3420							X	X												
3421	X						X	X												
3422	X						X	X												
3423							X	X												
3424										X										

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

The state agency does not adopt sections identified with the following symbol: †

CHAPTER 34
EXISTING STRUCTURES

SECTION 3401
GENERAL

3401.1 Scope. The provisions of this chapter shall control the *alteration*, repair, *addition* and change of occupancy of existing structures, *including state-regulated structures in accordance with Sections 3401.1.1 and 3401.1.2.*

[DSA-AC] For applications listed in Section 1.9.1 regulated by the Division of the State Architect-Access Compliance for accessibility requirements, see Chapter 11B, Section 1134B.

Exceptions:

1. Existing *bleachers*, grandstands and folding and telescopic seating shall comply with ICC 300-02.
2. *[HCD 2] For moved buildings and maintenance, alteration, repair, addition or change of occupancy to existing buildings and accessory structures in mobilehome parks or special occupancy parks as provided in Section 1.8.2.1.3. See California Code of Regulations, Title 25, Division 1, Chapters 2 and 2.2.*
3. *[HCD 1] Limited-density owner-built rural dwellings.*

3401.1.1 Existing state-owned structures. *The provisions of Sections* 3417 *through* 3422 *establish minimum standards for earthquake evaluation and design for retrofit of existing state-owned structures, including buildings owned by the University of California and the California State University.*

The provisions of Sections 3417 *through* 3422 *may be adopted by a local jurisdiction for earthquake evaluation and design for retrofit of existing buildings.*

3401.1.2 Public school buildings. [DSA-SS] *The provisions of Sections* 3417 *through* 3423 *establish minimum standards for earthquake evaluation and design for the rehabilitation of existing buildings for use as public school buildings under the jurisdiction of the Division of the State Architect-Structural Safety (DSA-SS, refer to Section 1.9.2.1) where required by Sections 4-307 and 4-309(c) of the California Administrative Code.*

The provisions of Section 3417 *through* 3423 *also establish minimum standards for earthquake evaluation and design for rehabilitation of existing public school buildings currently under the jurisdiction of DSA-SS.*

3401.1.3 Community college buildings. [DSA-SS/CC] *The provisions of Sections* 3417 *through* 3423 *establish minimum standards for earthquake evaluation and design for the rehabilitation of existing buildings for use as community college buildings under the jurisdiction of the Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC, refer to Section 1.9.2.2) where required by Sections 4-307 and 4-309(c) of the California Administrative Code.*

The provisions of Section 3417 *through* 3423 *also establish minimum standards for earthquake evaluation and design for rehabilitation of existing community college buildings currently under the jurisdiction of DSA-SS/CC.*

3401.2 Maintenance. Buildings and structures, and parts thereof, shall be maintained in a safe and sanitary condition. Devices or safeguards which are required by this code shall be maintained in conformance with the code edition under which installed. The owner or the owner's designated agent shall be responsible for the maintenance of buildings and structures. To determine compliance with this subsection, the *building official* shall have the authority to require a building or structure to be reinspected. The requirements of this chapter shall not provide the basis for removal or abrogation of fire protection and safety systems and devices in existing structures.

3401.3 Compliance. Alterations, repairs, additions and changes of occupancy to existing structures shall comply with the provisions for alterations, repairs, additions and changes of occupancy in the *California Fire Code, California Mechanical Code, California Plumbing Code, California Residential Code*, and *California Electrical Code*.

[HCD 1] See Chapter 34, Sections 3403.1.4.3, 3403.1.1 and 3404.1.1 and Title 25, Division 1, Chapter 1, Subchapter 1, commencing with Article 1, Section 1 for existing buildings or structures.

3401.4 Building materials. Building materials shall comply with the requirements of this section.

3401.4.1 Existing materials. Materials already in use in a building in compliance with requirements or approvals in effect at the time of their erection or installation shall be permitted to remain in use unless determined by the building code official to be dangerous to life, health or safety. Where such conditions are determined to be dangerous to life, health or safety, they shall be mitigated or made safe.

3401.4.2 New and replacement materials. Except as otherwise required or permitted by this code, materials permitted by the applicable code for new construction shall be used. Like materials shall be permitted for repairs and alterations, provided no hazard to life, health or property is created. Hazardous materials shall not be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose and location.

3401.4.3 Replacement, retention and extension of original materials. [HCD1] *Local ordinances or regulations shall permit the replacement, retention and extension of original materials, and the use of original methods of construction, for any building or accessory structure, provided such building or structure complied with the building code provisions in effect at the time of original construction and the building or accessory structure does not become or continue to be a substandard building. For additional information, see Health and Safety Code Sections 17912, 17920.3, 17922(d), 17922.3, 17958.8 and 17958.9.*

3401.5 Adoption of ASCE 41: [OSHPD 2 & 3] *All additions, alterations, repairs and seismic retrofit to the existing structures or portions thereof may be designed in accordance with the provisions of ASCE 41, as modified herein.*

> ***3401.5.1 ASCE 41 Section 1.4 –Rehabilitation Objectives.*** *Target building performance level shall be Life Safety (LS) Building Performance Level (3-C) as defined in Section 1.5.3.3 at Basic Safety Earthquake 1 (BSE-1) Seismic Hazard Level as defined in section 1.6.1.2 for Occupancy Category II Structures and Basic Safety Objective (BSO) Level as defined in Section 1.4.1 for Occupancy Category III Structures.*
>
> *Occupancy Category IV structures shall satisfy Immediate Occupancy (IO) Building Performance Level of (1-B) as defined in Section 1.5.3.2 at Basic Safety Earthquake 1 (BSE-1) Seismic Hazard Level as defined in Section 1.6.1.2 and Collapse Prevention (CP) building performance level (5-E) per Section 1.5.3.4 at Basic Safety Earthquake 2 (BSE-2) Seismic Hazard Level as defined in Section 1.6.1.1.*

> ***3401.5.2 ASCE 41 Section 1.6 - Seismic Hazard.*** *Response spectra and acceleration time histories shall be constructed in accordance with sections 1613 and 1803.7.*

> ***3401.5.3 Analysis procedure.*** *The selection of a particular analysis procedure from ASCE 41 may be subject to the approval of the enforcement agent.*

> ***3401.5.4 Structural design criteria.*** *Prior to implementation of ASCE 41 nonlinear dynamic procedures—the ground motion, analysis and design methods, material assumptions and acceptance criteria proposed by the engineer shall be reviewed by the enforcement agent.*

> ***3401.5.5 Structural observation, testing and inspections.*** *Construction, testing, inspection and structural observation requirements shall be as required for new construction.*

3401.6 Existing Group R-3 Occupancies. [SFM] *For smoke alarm requirements in existing buildings see Section 907.2.11.5.*

3401.7 Dangerous conditions. [BSC] *Regardless of the extent of structural or nonstructural damage, the building code official shall have the authority to require the elimination of conditions deemed dangerous.*

3401.8 Alternative compliance. *Work performed in accordance with the International Existing Building Code shall be deemed to comply with the provisions of this chapter.*

Exception: [OSHPD 2 & 3] *Section 3401.8 not permitted by OSHPD.*

SECTION 3402
DEFINITIONS

3402.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in the code, have the meanings shown herein.

DANGEROUS. Any building or structure or portion thereof that meets any of the conditions described below shall be deemed dangerous:

1. The building or structure has collapsed, partially collapsed, moved off its foundation or lacks the support of ground necessary to support it.
2. There exists a significant risk of collapse, detachment or dislodgment of any portion, member, appurtenance or ornamentation of the building or structure under service loads.

EXISTING STRUCTURE. A structure erected prior to the date of adoption of the appropriate code, or one for which a legal building *permit* has been issued.

PRIMARY FUNCTION. A *primary function* is a major activity for which the facility is intended. Areas that contain a *primary function* include, but are not limited to, the customer service lobby of a bank, the dining area of a cafeteria, the meeting rooms in a conference center, as well as offices and other work areas in which the activities of the public accommodation or other private entity using the facility are carried out. Mechanical rooms, boiler rooms, supply storage rooms, employee lounges or locker rooms, janitorial closets, entrances, corridors and restrooms are not areas containing a *primary function*.

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

SUBSTANTIAL STRUCTURAL DAMAGE. A condition where:

1. In any *story*, the vertical elements of the lateral force-resisting system have suffered damage such that the lateral load-carrying capacity of the structure in any horizontal direction has been reduced by more than 20 percent from its pre-damage condition; or
2. The capacity of any vertical gravity load-carrying component, or any group of such components, that supports more than 30 percent of the total area of the structure's floor(s) and roof(s) has been reduced more than 20 percent from its pre-damage condition and the remaining capacity of such affected elements, with respect to all dead and live loads, is less than 75 percent of that required by this code for new buildings of similar structure, purpose and location.

TECHNICALLY INFEASIBLE. An *alteration* of a building or a facility that has little likelihood of being accomplished because the existing structural conditions require the removal or *alteration* of a load-bearing member that is an essential part of the structural frame, or because other existing physical or site constraints prohibit modification or addition of elements, spaces or features which are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility.

SECTION 3409
HISTORIC BUILDINGS

[DSA-AC] For applications listed in Section 1.9.1 regulated by the Division of the State Architect-Access Compliance for Qualified Historical Buildings, see California Code of Regulations, Title 24, Part 8 (California Historical Building Code).

3409.1 Historic buildings. The provisions of this code relating to the construction, repair, *alteration*, *addition*, restoration and movement of structures, and change of occupancy shall not be mandatory for *historic buildings* where such buildings are judged by the *building official* to not constitute a distinct life safety hazard.

3409.2 Flood hazard areas. Within flood hazard areas established in accordance with Section 1612.3, where the work proposed constitutes substantial improvement as defined in Section 1612.2, the building shall be brought into compliance with Section 1612.

Exception: *Historic buildings* that are:

1. *Listed* or preliminarily determined to be eligible for listing in the National Register of Historic Places;
2. Determined by the Secretary of the U.S. Department of Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district; or
3. Designated as historic under a state or local historic preservation program that is *approved* by the Department of Interior.

SECTION 3410
MOVED STRUCTURES

3410.1 Conformance. Structures moved into or within the jurisdiction shall comply with the provisions of this code for new structures.

Exception: [HCD 1 & HCD 2] *After July 1, 1978, local ordinances or regulations for moved apartment houses and dwellings shall permit the retention of existing materials and methods of construction, provided the apartment house or dwelling complies with the building standards for foundations applicable to new construction and does not become or continue to be a substandard building. For additional information, see Health and Safety Code Section 17958.9.*

SECTION 3411
ACCESSIBILITY FOR EXISTING BUILDINGS

3411.1 Scope. The provisions of Sections 3411.1 through 3411.9 apply to maintenance, change of occupancy, additions and alterations to existing buildings, including those identified as *historic buildings*.

Exception: Type B *dwelling* or sleeping units required by *Chapter 11A or 11B as applicable* of this code are not required to be provided in existing buildings and facilities being altered or undergoing a change of occupancy.

3411.2 Maintenance of facilities. A building, facility or element that is constructed or altered to be *accessible* shall be maintained *accessible* during occupancy.

3411.3 Extent of application. An *alteration* of an existing element, space or area of a building or facility shall not impose a requirement for greater accessibility than that which would be required for new construction.

Alterations shall not reduce or have the effect of reducing accessibility of a building, portion of a building or facility.

3411.4 Change of occupancy. Existing buildings that undergo a change of group or occupancy shall comply with this section.

3411.4.1 Partial change in occupancy. Where a portion of the building is changed to a new occupancy classification, any alterations shall comply with Sections 3411.6, 3411.7 and 3411.8.

3411.4.2 Complete change of occupancy. Where an entire building undergoes a change of occupancy, it shall comply with Section 3411.4.1 and shall have all of the following *accessible* features:

1. At least one *accessible* building entrance.
2. At least one *accessible* route from an *accessible* building entrance to *primary function* areas.
3. Signage complying with *Chapter 11A or 11B as applicable.*
4. Accessible parking, where parking is being provided.
5. At least one *accessible* passenger loading zone, when loading zones are provided.
6. At least one *accessible* route connecting *accessible* parking and *accessible* passenger loading zones to an *accessible* entrance.

Where it is *technically infeasible* to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.

3411.5 Additions. Provisions for new construction shall apply to additions. An *addition* that affects the accessibility to, or contains an area of, a primary function shall comply with the requirements in Section 3411.7.

3411.6 Alterations. A building, facility or element that is altered shall comply with the applicable provisions in *Chapter 11A or 11B as applicable* of this code and ICC A117.1, unless *technically infeasible*. Where compliance with this section is *technically infeasible*, the *alteration* shall provide access to the maximum extent technically feasible.

Exceptions:

1. The altered element or space is not required to be on an *accessible* route, unless required by Section 3411.7.
2. *Accessible means of egress* required by Chapter 10 are not required to be provided in existing buildings and facilities.

3. The *alteration* to Type A individually owned *dwelling* units within a Group R-2 occupancy shall meet the provision for a Type B *dwelling* unit and shall comply with the applicable provisions in *Chapter 11A or 11B as applicable.*

3411.7 Alterations affecting an area containing a primary function. Where an *alteration* affects the accessibility to, or contains an area of *primary function*, the route to the *primary function* area shall be *accessible*. The *accessible* route to the *primary function* area shall include toilet facilities or drinking fountains serving the area of *primary function*.

Exceptions:

1. The costs of providing the *accessible* route are not required to exceed 20 percent of the costs of the *alterations* affecting the area of *primary function*.
2. This provision does not apply to *alterations* limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to *alterations* limited solely to mechanical systems, electrical systems, installation or *alteration* of fire protection systems and abatement of hazardous materials.
4. This provision does not apply to *alterations* undertaken for the primary purpose of increasing the accessibility of an existing building, facility or element.

3411.8 Scoping for alterations. The provisions of Sections 3411.8.1 through 3411.8.14 shall apply to *alterations* to existing buildings and facilities.

3411.8.1 Entrances. *Accessible* entrances shall be provided in accordance with *Chapter 11A or 11B as applicable*.

Exception: Where an *alteration* includes alterations to an entrance, and the building or facility has an *accessible* entrance, the altered entrance is not required to be *accessible*, unless required by Section 3411.7. Signs complying with *Chapter 11A or 11B as applicable* shall be provided.

3411.8.2 Elevators. Altered elements of existing elevators shall comply with *California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders* and ICC A117.1. Such elements shall also be altered in elevators programmed to respond to the same hall call control as the altered elevator.

3411.8.3 Platform lifts. Platform (wheelchair) lifts complying with ICC A117.1 and installed in accordance with ASME A18.1 shall be permitted as a component of an *accessible* route.

3411.8.4 Stairs and escalators in existing buildings. In *alterations*, change of occupancy or *additions* where an escalator or *stair* is added where none existed previously and major structural modifications are necessary for installation, an *accessible* route shall be provided between the levels served by the escalator or *stairs* in accordance with *Chapter 11A or 11B as applicable*.

3411.8.5 Ramps. Where slopes steeper than allowed by Section 1010.2 are necessitated by space limitations, the slope of ramps in or providing access to existing buildings or facilities shall comply with Table 3411.8.5.

TABLE 3411.8.5
RAMPS

SLOPE	MAXIMUM RISE
Steeper than 1:10 but not steeper than 1:8	3 inches
Steeper than 1:12 but not steeper than 1:10	6 inches

For SI: 1 inch = 25.4 mm.

3411.8.6 Performance areas. Where it is *technically infeasible* to alter performance areas to be on an *accessible* route, at least one of each type of performance area shall be made *accessible*.

3411.8.7 Accessible dwelling or sleeping units. Where Group I-1, I-2, I-3, R-1, R-2 or R-4 *dwelling* or *sleeping units* are being altered or added, the requirements of *Chapter 11A or 11B as applicable* for *Accessible* units apply only to the quantity of spaces being altered or added.

3411.8.8 Type A dwelling or sleeping units. Where more than 20 Group R-2 *dwelling* or *sleeping units* are being added, the requirements of *Chapter 11A or 11B as applicable* for *Type A* units apply only to the quantity of the spaces being added.

3411.8.9 Type B dwelling or sleeping units. Where four or more Group I-1, I-2, R-1, R-2, R-3 or R-4 *dwelling* or *sleeping units* are being added, the requirements of *Chapter 11A or 11B as applicable* for *Type B units* apply only to the quantity of the spaces being added.

3411.8.10 Jury boxes and witness stands. In *alterations*, *accessible* wheelchair spaces are not required to be located within the defined area of raised jury boxes or witness stands and shall be permitted to be located outside these spaces where the ramp or lift access restricts or projects into the *means of egress*.

3411.8.11 Toilet rooms. Where it is *technically infeasible* to alter existing toilet and bathing facilities to be *accessible*, an *accessible* family or assisted-use toilet or bathing facility constructed in accordance with *Chapter 11A or 11B as applicable* is permitted. The family or assisted-use facility shall be located on the same floor and in the same area as the existing facilities.

3411.8.12 Dressing, fitting and locker rooms. Where it is *technically infeasible* to provide *accessible* dressing, fitting or locker rooms at the same location as similar types of rooms, one *accessible* room on the same level shall be provided. Where separate-sex facilities are provided, *accessible* rooms for each sex shall be provided. Separate-sex facilities are not required where only unisex rooms are provided.

3411.8.13 Fuel dispensers. Operable parts of replacement fuel dispensers shall be permitted to be 54 inches (1370 mm) maximum measured from the surface of the vehicular way where fuel dispensers are installed on existing curbs.

3411.8.14 Thresholds. The maximum height of thresholds at doorways shall be $^3/_4$ inch (19.1 mm). Such thresholds shall have beveled edges on each side.

3411.9 Historic buildings. These provisions shall apply to buildings and facilities designated as historic structures that

3422.7 Resolution of conflicts. *When the conclusions and recommendations of the peer reviewer conflict with the registered design professional's proposed design, the enforcement agency shall make the final determination of the requirement for the design.*

SECTION 3423
ADDITIONAL REQUIREMENTS FOR PUBLIC SCHOOLS AND COMMUNITY COLLEGES

The requirements of Section 3423 apply only to public schools under the jurisdiction of the Division of the State Architect-Structural Safety (DSA-SS, refer to Section 1.9.2.1) and community colleges under the jurisdiction of the Division of the State Architect-Structural Safety/Community Colleges (DSA-SS/CC). Refer to Section 1.9.2.2.

3423.1 Evaluation and design criteria report. *During the schematic phase of the project, the owner or the registered design professional in charge of the design shall prepare and sign an Evaluation and Design Criteria Report in accordance with Part 1, Title 24, C. C. R., Section 4-307(a). The report shall be submitted to the DSA for review and approval prior to proceeding with design development of the rehabilitation.*

The Evaluation and Design Criteria Report shall:

1. *Identify the building(s) structural and nonstructural systems, potential deficiencies in the elements or systems and the proposed method for retrofit.*
2. *Identify geological and site-related hazards.*
3. *Propose the methodology for evaluation and retrofit design.*
4. *Propose the complete program for data collection (Section 3418.2).*
5. *Include existing or "as-built" building plans, reports and associated documents of the existing construction.*

3423.2 Rehabilitation involving only portions of structures. *Where only a portion(s) of a structure is to be rehabilitated, the public school or community college portion of the structure shall:*

1. *Be seismically separated from the unrehabilitated portion in accordance with Chapter 16 of Part 2, Title 24, or the entire structure shall be rehabilitated in accordance with this Section. For structures in which the unrehabilitated portion is above or below the school or community college portion, the entire structure shall be rehabilitated in accordance with this division.*
2. *Be retrofitted as necessary to protect the occupants from falling hazards of the unrehabilitated portion of the building, and;*
3. *Be retrofitted as necessary to protect required exitways being blocked by collapse or falling hazards of the unrehabilitated portion.*

SECTION 3424
ADDITIONAL REQUIREMENTS FOR SKILLED NURSING FACILITIES AND INTERMEDIATE CARE FACILITIES [OSHPD 2]

3424.1 Services/systems and utilities. *Services/systems and utilities that are necessary to the operation of a skilled nursing facility or intermediate care facility shall meet the requirements of this section. Examples of services/systems and utilities include but are not limited to normal power; emergency power; nurse call; fire alarm; communication and data systems; space-heating systems; process load systems; cooling systems; domestic hot and cold water systems; means of egress systems; fire-suppression systems; building drain and sewer systems; and medical gas systems that support licensed services.*

Exception: *Remodel projects that use available existing services/systems and utilities are exempted from the requirements of this section. The enforcing agency may exempt minor addition, minor alteration, and minor remodel projects and projects to upgrade existing services/systems and utilities from the requirements of this section.*

***3424.*1.1** *Services/systems and utilities for skilled nursing facilities and intermediate care facilities.*

***3424.*1.2 New buildings and additions.** *Services/systems and utilities for new buildings and additions shall not originate in or pass through or under nonconforming structures. The structures must be under the jurisdiction of OSHPD.*

Exception: *As an alternate to this section, skilled nursing and intermediate care facilities may meet the requirements in Section 3416A.1.1.1 for hospital buildings.*

3424.*1.3 Alterations and remodels.* *Services/systems and utilities for alterations or remodels of existing buildings may pass through nonconforming structures provided that the structure is under the jurisdiction of OSHPD, and the new services/systems and utilities passing through the buildings are anchored and braced for seismic forces in accordance with these regulations for new buildings and are free of adverse seismic interactions caused by potential failure of overhead or adjacent components.*

3424.2 Means of egress for single-story light frame skilled nursing facilities and intermediate care facilities. *Means of egress for single-story light frame skilled nursing facilities and intermediate care facilities shall comply with the requirements of Sections 3424.2.1 and 3424.2.2.*

3424.2.1 New facilities or additions to existing facilities. *Means of egress for new skilled nursing facilities or intermediate care facilities, or additions to existing skilled nursing facilities or intermediate care facilities shall only pass through conforming buildings.*

Exception: *As an alternate, the nursing facilities and intermediate care facilities may meet the egress requirements in Sections 3417A.1.1.1.1 through 3417A.1.1.1.5 for hospital buildings.*

3424.2.2 Jurisdiction. *Means of egress for skilled nursing facilities and intermediate care facilities shall only pass through buildings that are under the jurisdiction of the Office of Statewide Health Planning and Development (OSHPD).*

CHAPTER 34*A*
EXISTING STRUCTURES

SECTION 3401*A* GENERAL

3401*A*.1 Scope. The provisions of this chapter shall control the alteration, repair, addition and change of occupancy of existing structures *for applications listed in Sections 1.10.1 (OSHPD 1) and 1.10.4 (OSHPD 4) regulated by the Office of Statewide Health Planning and Development (OSHPD).*

These applications include hospitals, skilled nursing facilities, intermediate care facilities and correctional treatment centers.

***Exception: [OSHPD 2]** Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light-steel-frame construction as defined in Health and Safety Code Section 129725, which shall comply with Chapter 34 and any applicable amendments therein.*

[DSA-AC] For applications listed in Section 1.9.1 regulated by the Division of the State Architect-Access Compliance for accessibility requirements, see Chapter 11B, Section 1134B.

3401*A*.2 Maintenance. Buildings and structures, and parts thereof, shall be maintained in a safe and sanitary condition. Devices or safeguards which are required by this code shall be maintained in conformance with the code edition under which installed. The owner or the owner's designated agent shall be responsible for the maintenance of buildings and structures. To determine compliance with this subsection, the *building official* shall have the authority to require a building or structure to be reinspected. The requirements of this chapter shall not provide the basis for removal or abrogation of fire protection and safety systems and devices in existing structures.

3401*A*.3 Compliance. Alterations, repairs, additions and changes of occupancy to existing structures shall comply with the provisions for alterations, repairs, additions and changes of occupancy in the *California Fire Code, California Mechanical Code, California Plumbing Code and California Electrical Code.*

3401*A*.4 Building materials. Building materials shall comply with the requirements of this section.

3401*A*.4.1 Existing materials. Materials already in use in a building in compliance with requirements or approvals in effect at the time of their erection or installation shall be permitted to remain in use unless determined by the building code official to be dangerous to life, health or safety. Where such conditions are determined to be dangerous to life, health or safety, they shall be mitigated or made safe.

3401*A*.4.2 New and replacement materials. Except as otherwise required or permitted by this code, materials permitted by the applicable code for new construction shall be used. Like materials shall be permitted for repairs and alterations, provided no hazard to life, health or property is created. Hazardous materials shall not be used where the code for new construction would not *permit* their use in buildings of similar occupancy, purpose and location.

SECTION 3402*A* DEFINITIONS

3402*A*.1 Definitions. The following words and terms shall, for the purposes of this chapter and as used elsewhere in the code, have the meanings shown herein. *Definitions provided in Section 1613A.2, ASCE 7 Section 11.2 and ASCE 41 shall apply when appropriate in addition to terms defined in this section:*

***ASSOCIATED STRUCTURAL ALTERATIONS** means any change affecting existing structural elements or requiring new structural elements for vertical or lateral support of an otherwise nonstructural alteration.*

DANGEROUS. Any building or structure or portion thereof that meets any of the conditions described below shall be deemed dangerous:

1. The building or structure has collapsed, partially collapsed, moved off its foundation or lacks the support of ground necessary to support it.
2. There exists a significant risk of collapse, detachment or dislodgment of any portion, member, appurtenance or ornamentation of the building or structure under service loads.

EXISTING STRUCTURE. A structure *that has a valid certificate of occupancy issued by the building official.*

***GENERAL ACUTE CARE HOSPITAL**. See Section 1224.3.*

***INCIDENTAL STRUCTURAL ALTERATIONS, ADDITIONS OR REPAIRS** are alterations, additions or repairs which would not reduce the story lateral shear force-resisting capacity by more than 5 percent or increase the story shear by more than 5 percent in any existing story.*

***MAJOR STRUCTURAL ALTERATIONS, ADDITIONS OR REPAIRS** are those alterations, or additions or repairs of greater extent than minor structural alterations or additions.*

***MINOR STRUCTURAL ALTERATIONS, ADDITIONS OR REPAIRS** are alterations, additions or repairs of greater extent than incidental structural additions or alterations which would not reduce the story shear lateral-force-resisting capacity by more than 10 percent or increase base shear by more than 10 percent.*

***NONSTRUCTURAL ALTERATION** is any alteration which neither affects existing structural elements nor requires new structural elements for vertical or lateral support and which does not increase the lateral shear force in any story by more than 5 percent.*

***NPC 1, NPC 2, NPC 3/NPC 3R, NPC 4 and NPC 5** are the building nonstructural performance categories for Hospital Buildings defined in Table 11.1 of California Administrative Code (Part 1, Title 24 CCR), Chapter 6.*

***PEER REVIEW** refers to procedure contained in Section 3414A.*

PRIMARY FUNCTION. A *primary function* is a major activity for which the facility is intended. Areas that contain a *primary function* include, but are not limited to, the customer

service lobby of a bank, the dining area of a cafeteria, the meeting rooms in a conference center, as well as offices and other work areas in which the activities of the public accommodation or other private entity using the facility are carried out. Mechanical rooms, boiler rooms, supply storage rooms, employee lounges or locker rooms, janitorial closets, entrances, corridors and restrooms are not areas containing a *primary function*.

REPAIR *as used in this chapter means all the design and construction work affecting existing or requiring new structural elements undertaken to restore or enhance the structural and nonstructural load resisting system participating in vertical or lateral response of a structure primarily intended to correct the effects of deterioration or impending or actual failure, regardless of cause.*

RETROFIT *is the construction of any new element or system, or the alteration of any existing element or system required to bring an existing building, or portion thereof, conforming to earlier code requirements, into conformance with standards of the currently effective California Building Standards Code.*

SPC 1, SPC 2, SPC 3, SPC 4 and SPC 5 *are the building structural performance categories for Hospital Buildings defined in Table 2.5.3 of California Administrative Code (Part 1, Title 24 CCR), Chapter 6.*

SUBSTANTIAL STRUCTURAL DAMAGE. A condition where:

1. In any *story*, the vertical elements of the lateral force-resisting system have suffered damage such that the lateral load-carrying capacity of the structure in any horizontal direction has been reduced by more than *10* percent from its predamage condition; or
2. The capacity of any vertical gravity load-carrying component, or any group of such components, that supports more than 30 percent of the total area of the structure's floor(s) and roof(s) has been reduced more than *10* percent from its predamage condition and the remaining capacity of such affected elements, with respect to all dead and live loads, is less than 75 percent of that required by this code for new buildings of similar structure, purpose and location.

TECHNICALLY INFEASIBLE. An *alteration* of a building or a facility that has little likelihood of being accomplished because the existing structural conditions require the removal or *alteration* of a load-bearing member that is an essential part of the structural frame, or because other existing physical or site constraints prohibit modification or addition of elements, spaces or features which are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility.

VOLUNTARY STRUCTURAL ALTERATION *is any alteration of existing structural element or provision of new structural elements which is not necessary for vertical or lateral support of other work and is initiated by the applicant primarily for the purpose of increasing the vertical or lateral load-carrying strength or stiffness of an existing building.*

SECTION 3403A
ADDITIONS

3403*A*.1 General. Additions to any building or structure shall comply with the requirements of this code for new construction. Alterations to the existing building or structure shall be made to ensure that the existing building or structure together with the *addition* are no less conforming with the provisions of this code than the existing building or structure was prior to the *addition*. An existing building together with its additions shall comply with the height and area provisions of Chapter 5.

3403*A*.2 Flood hazard areas. For buildings and structures in flood hazard areas established in Section *1612A.3*, any *addition* that constitutes substantial improvement of the *existing structure*, as defined in Section *1612A.2*, shall comply with the flood design requirements for new construction, and all aspects of the *existing structure* shall be brought into compliance with the requirements for new construction for flood design.

For buildings and structures in flood hazard areas established in Section *1612A.3*, any additions that do not constitute substantial improvement or substantial damage of the *existing structure*, as defined in Section *1612A.2*, are not required to comply with the flood design requirements for new construction.

3403*A*.3 Existing structural elements carrying gravity load. Any existing gravity load-carrying structural element for which an *addition* and its related alterations cause an increase in design gravity load of more than 5 percent shall be strengthened, supplemented, replaced or otherwise altered as needed to carry the increased load required by this code for new structures. Any existing gravity load-carrying structural element whose gravity load-carrying capacity is decreased shall be considered an altered element subject to the requirements of Section *3404A.3*. Any existing element that will form part of the lateral load path for any part of the *addition* shall be considered an existing lateral load-carrying structural element subject to the requirements of Section *3403A.4*.

3403*A*.3.1 Design live load. Where the *addition* does not result in increased design live load, existing gravity load-carrying structural elements shall be permitted to be evaluated and designed for live loads *approved* prior to the *addition*. If the *approved* live load is less than that required by Section *1607A*, the area designed for the nonconforming live load shall be posted with placards of *approved* design indicating the *approved* live load. Where the *addition* does result in increased design live load, the live load required by Section *1607A* shall be used.

3403*A*.4 Existing structural elements carrying lateral load. Where the *addition* is structurally independent of the *existing structure*, existing lateral load-carrying structural elements shall be permitted to remain unaltered. Where the *addition* is not structurally independent of the *existing structure*, the *existing structure* and its *addition* acting together as a single structure shall be shown to meet the requirements of Sections *1609A* and *1613A*.

Exceptions:

1. Any existing lateral load-carrying structural element whose demand-capacity ratio with the *addition* con-

sidered is no more than 10 percent greater than its demand-capacity ratio with the *addition* ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with Sections *1609A* and *1613A*. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of additions and alterations since original construction.

2. *For incidental alterations, drift limits based on original design code shall be permitted to be used in lieu of the drift limits required by ASCE 7.*

3403*A*.4.1 Seismic. Seismic requirements for alterations shall be in accordance with this section. Where the existing seismic force-resisting system is a type that can be designated ordinary *or is a welded steel moment frame constructed under a permit issued prior to October 25, 1994*, values of R, Ω_0 and C_d for the existing seismic force-resisting system shall be those specified by this code for an ordinary system unless it is demonstrated that the existing system will provide performance equivalent to that of a detailed intermediate or special system.

SECTION 3404A
ALTERATIONS

3404*A*.1 General. Except as provided by this section, alterations to any building or structure shall comply with the requirements of the code for new construction. Alterations shall be such that the existing building or structure is no less complying with the provisions of this code than the existing building or structure was prior to the *alteration*.

Exceptions:

1. An existing *stairway* shall not be required to comply with the requirements of Section 1009 where the existing space and construction does not allow a reduction in pitch or slope.
2. Handrails otherwise required to comply with Section 1009.12 shall not be required to comply with the requirements of Section 1012.6 regarding full extension of the handrails where such extensions would be hazardous due to plan configuration.

3404*A*.2 Flood hazard areas. For buildings and structures in flood hazard areas established in Section *1612A.3*, any *alteration* that constitutes substantial improvement of the existing structure, as defined in Section *1612A.2*, shall comply with the flood design requirements for new construction, and all aspects of the *existing structure* shall be brought into compliance with the requirements for new construction for flood design.

For buildings and structures in flood hazard areas established in Section *1612A.3*, any alterations that do not constitute substantial improvement or substantial damage of the existing structure, as defined in Section *1612A.2*, are not required to comply with the flood design requirements for new construction.

3404*A*.3 Existing structural elements carrying gravity load. Any existing gravity load-carrying structural element for which an *alteration* causes an increase in design gravity load of more than 5 percent shall be strengthened, supplemented, replaced or otherwise altered as needed to carry the increased gravity load required by this code for new structures. Any existing gravity load-carrying structural element whose gravity load-carrying capacity is decreased as part of the *alteration* shall be shown to have the capacity to resist the applicable design gravity loads required by this code for new structures.

3404*A*.3.1 Design live load. Where the *alteration* does not result in increased design live load, existing gravity load-carrying structural elements shall be permitted to be evaluated and designed for live loads *approved* prior to the *alteration*. If the *approved* live load is less than that required by Section *1607A*, the area designed for the nonconforming live load shall be posted with placards of *approved* design indicating the *approved* live load. Where the *alteration* does result in increased design live load, the live load required by Section *1607A* shall be used.

3404*A*.4 Existing structural elements carrying lateral load. Except as permitted by Section *3404A.5*, where the *alteration* increases design lateral loads in accordance with Section *1609A* or *1613A*, or where the *alteration* results in a structural irregularity as defined in ASCE 7, or where the *alteration* decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall be shown to meet the requirements of Sections *1609A* and *1613A*.

Exceptions:

1. Any existing lateral load-carrying structural element whose demand-capacity ratio with the *alteration* considered is no more than 10 percent greater than its demand-capacity ratio with the *alteration* ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces per Sections *1609A* and *1613A*. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces, and capacities shall account for the cumulative effects of additions and alterations since original construction.
2. *For incidental alterations, drift limits based on original design code shall be permitted to be used in lieu of the drift limits required by ASCE 7.*

3404*A*.4.1 Seismic. Seismic requirements for alterations shall be in accordance with this section. Where the existing seismic force-resisting system is a type that can be designated ordinary *or is a welded steel moment frame constructed under a permit issued prior to October 25, 1994,* values of R, Ω_0 and C_d for the existing seismic force-resisting system shall be those specified by this code for an ordinary system unless it is demonstrated that the existing system will provide performance equivalent to that of a detailed intermediate or special system.

3404*A*.5 Voluntary seismic improvements. Alterations to existing structural elements or additions of new structural elements that are not otherwise required by this chapter and are initiated for the purpose of improving the performance of the seismic force-resisting system of an *existing structure* or the performance of seismic bracing or anchorage of existing nonstructural elements shall be permitted, provided that an engineering analysis is submitted demonstrating the following:

1. The altered structure, and the altered *structural and* nonstructural elements are no less in compliance with the provisions of this code with respect to earthquake design than they were prior to the *alteration*.
2. New structural elements are *designed*, detailed and connected to the existing structural elements as required by Chapter 16*A*. *Alterations of existing structural elements shall be based on design demand required by Chapter 16A but need not exceed the maximum load effect that can be transferred to the elements by the system.*

   Exception: *Seismic design in accordance with Sections 3411A and 3412A shall be permitted.*
3. New or relocated nonstructural elements are *designed*, detailed and connected to existing or new structural elements as required by Chapter *16A*.
4. The alterations do not create a structural irregularity as defined in ASCE 7 or make an existing structural irregularity more severe.

3404*A*.6 Means of egress capacity factors. Alterations to any existing building or structure shall not be affected by the egress width factors in Section 1005.1 for new construction in determining the minimum egress widths or the minimum number of exits in an existing building or structure. The minimum egress widths for the components of the *means of egress* shall be based on the *means of egress* width factors in the building code under which the building was constructed, and shall be considered as complying *means of egress* for any *alteration* if, in the opinion of the building code official, they do not constitute a distinct hazard to life.

SECTION 3405A
REPAIRS

3405*A*.1 General. Buildings and structures, and parts thereof, shall be repaired in compliance with Section *3401A.2*. Work on nondamaged components that is necessary for the required repair of damaged components shall be considered part of the repair and shall not be subject to the requirements for alterations in this chapter. Routine maintenance required by Section *3401A.2*, ordinary repairs exempt from *permit* in accordance with Section 105.2, and abatement of wear due to normal service conditions shall not be subject to the requirements for repairs in this section.

3405*A*.1.1 Dangerous conditions. Regardless of the extent of structural or nonstructural damage, the building code official shall have the authority to require the elimination of conditions deemed dangerous.

3405*A*.2 Substantial structural damage to vertical elements of the lateral force-resisting system. A building that has sustained substantial structural damage to the vertical elements of its lateral force-resisting system shall be evaluated and repaired in accordance with the applicable provisions of Sections *3405A.2.1* through *3405A.2.3*.

3405*A*.2.1 Evaluation. The building shall be evaluated by a *registered design professional*, and the evaluation findings shall be submitted to the code official. The evaluation shall establish whether the damaged building, if repaired to its predamage state, would comply with the provisions of this code for wind and earthquake loads. Evaluation for earthquake loads shall be required if the substantial structural damage was caused by or related to earthquake effects or if the building is in Seismic Design Category D, E or F.

Wind loads for this evaluation shall be those prescribed in Section *1609A*. Earthquake loads for this evaluation, if required, shall be permitted to be 75 percent of those prescribed in Section *1613A*. *Where the existing seismic force-resisting system is a type that can be designated ordinary or is a welded steel moment frame constructed under a permit issued prior to October 25, 1994, values* of R, Ω_0 and C_d for the existing seismic force-resisting system shall be those specified by this code for an ordinary system unless it is demonstrated that the existing system will provide performance equivalent to that of an intermediate or special system.

3405*A*.2.2 Extent of repair for compliant buildings. If the evaluation establishes compliance of the predamage building in accordance with Section *3405A.2.1*, then repairs shall be permitted that restore the building to its predamage state using materials and strengths that existed prior to the damage.

3405*A*.2.3 Extent of repair for noncompliant buildings. If the evaluation does not establish compliance of the predamage building in accordance with Section *3405A.2.1,* then the building shall be rehabilitated to comply with applicable provisions of this code for load combinations, including wind or seismic loads. The wind loads for the repair shall be as required by the building code in effect at the time of original construction, unless the damage was caused by wind, in which case the wind loads shall be as required by the code in effect at the time of original construction or as required by this code, whichever are greater. Earthquake loads for this rehabilitation design shall be those required for the design of the predamage building, but not less than *ninety* percent of those prescribed in Section *1613A*. New structural members and connections required by this rehabilitation design shall comply with the detailing provisions of this code for new buildings of similar structure, purpose and location.

3405*A*.3 Substantial structural damage to gravity load-carrying components. Gravity load-carrying components that have sustained substantial structural damage shall be rehabilitated to comply with the applicable provisions of this code for dead and live loads. Snow loads shall be considered if the substantial structural damage was caused by or related to snow load effects. Existing gravity load-carrying structural elements shall be permitted to be designed for live loads *approved* prior to the damage. Nondamaged gravity load-carrying compo-

nents that receive dead, live or snow loads from rehabilitated components shall also be rehabilitated or shown to have the capacity to carry the design loads of the rehabilitation design. New structural members and connections required by this rehabilitation design shall comply with the detailing provisions of this code for new buildings of similar structure, purpose and location.

3405*A*.3.1 Lateral force-resisting elements. Regardless of the level of damage to vertical elements of the lateral force-resisting system, if substantial structural damage to gravity load-carrying components was caused primarily by wind or earthquake effects, then the building shall be evaluated in accordance with Section *3405A.2.1* and, if noncompliant, rehabilitated in accordance with Section *3405A.2.3*.

3405*A*.4 Less than substantial structural damage. For damage less than substantial structural damage, repairs shall be allowed that restore the building to its predamage state using materials and strengths that existed prior to the damage. New structural members and connections used for this repair shall comply with the detailing provisions of this code for new buildings of similar structure, purpose and location.

3405*A*.5 Flood hazard areas. For buildings and structures in flood hazard areas established in Section *1612A.3*, any repair that constitutes substantial improvement of the *existing structure*, as defined in Section *1612A.2*, shall comply with the flood design requirements for new construction, and all aspects of the *existing structure* shall be brought into compliance with the requirements for new construction for flood design.

For buildings and structures in flood hazard areas established in Section *1612A.3*, any repairs that do not constitute substantial improvement or substantial damage of the *existing structure*, as defined in Section *1612A.2*, are not required to comply with the flood design requirements for new construction.

SECTION 3406A
FIRE ESCAPES

3406*A*.1 Where permitted. Fire escapes shall be permitted only as provided for in Sections 3406*A*.1.1 through 3406*A*.1.4.

3406*A*.1.1 New buildings. Fire escapes shall not constitute any part of the required *means of egress* in new buildings.

3406*A*.1.2 Existing fire escapes. Existing fire escapes shall be continued to be accepted as a component in the *means of egress* in existing buildings only.

3406*A*.1.3 New fire escapes. New fire escapes for existing buildings shall be permitted only where exterior *stairs* cannot be utilized due to lot lines limiting *stair* size or due to the sidewalks, alleys or roads at grade level. New fire escapes shall not incorporate ladders or access by windows.

3406*A*.1.4 Limitations. Fire escapes shall comply with this section and shall not constitute more than 50 percent of the required number of exits nor more than 50 percent of the required *exit* capacity.

3406*A*.2 Location. Where located on the front of the building and where projecting beyond the building line, the lowest landing shall not be less than 7 feet (2134 mm) or more than 12 feet (3658 mm) above grade, and shall be equipped with a counterbalanced stairway to the street. In alleyways and thoroughfares less than 30 feet (9144 mm) wide, the clearance under the lowest landing shall not be less than 12 feet (3658 mm).

3406*A*.3 Construction. The fire escape shall be designed to support a live load of 100 pounds per square foot (4788 Pa) and shall be constructed of steel or other *approved* noncombustible materials. Fire escapes constructed of wood not less than nominal 2 inches (51 mm) thick are permitted on buildings of Type 5 construction. Walkways and railings located over or supported by combustible roofs in buildings of Type 3 and 4 construction are permitted to be of wood not less than nominal 2 inches (51 mm) thick.

3406*A*.4 Dimensions. Stairs shall be at least 22 inches (559 mm) wide with risers not more than, and treads not less than, 8 inches (203 mm) and landings at the foot of stairs not less than 40 inches (1016 mm) wide by 36 inches (914 mm) long, located not more than 8 inches (203 mm) below the door.

3406*A*.5 Opening protectives. Doors and windows along the fire escape shall be protected with $^3/_4$-hour opening protectives.

SECTION 3407A
GLASS REPLACEMENT

3407*A*.1 Conformance. The installation or replacement of glass shall be as required for new installations.

SECTION 3408A
CHANGE OF OCCUPANCY

3408*A*.1 Conformance. No change shall be made in the use or occupancy of any building that would place the building in a different division of the same group of occupancies or in a different group of occupancies, unless such building is made to comply with the requirements of this code for such division or group of occupancies. Subject to the approval of the *building official*, the use or occupancy of existing buildings shall be permitted to be changed and the building is allowed to be occupied for purposes in other groups without conforming to all the requirements of this code for those groups, provided the new or proposed use is less hazardous, based on life and fire risk, than the existing use.

3408*A*.2 Certificate of occupancy. A certificate of occupancy shall be issued where it has been determined that the requirements for the new occupancy classification have been met.

3408*A*.3 Stairways. Existing stairways in an *existing structure* shall not be required to comply with the requirements of a new *stairway* as outlined in Section 1009 where the existing space and construction will not allow a reduction in pitch or slope.

3408*A*.4 Change of occupancy. When a change of occupancy results in a structure being reclassified to a higher occupancy category, the structure shall conform to the seismic requirements for a new structure of the higher occupancy category. Where the existing seismic force-resisting system is a type that can be designated ordinary *or is a welded steel moment frame constructed under a permit issued prior to October 25, 1994,*

values of R, Ω_0 and C_d for the existing seismic force-resisting system shall be those specified by this code for an ordinary system unless it is demonstrated that the existing system will provide performance equivalent to that of a detailed, intermediate or special system.

Exception: Specific seismic detailing requirements of this code or Section *1613A* for a new structure shall not be required to be met where it can be shown that the level of performance and seismic safety is equivalent to that of a new structure. Such analysis shall consider the regularity, over strength, redundancy and ductility of the structure within the context of the existing and retrofit (if any) detailing provided.

SECTION 3409*A*
HISTORIC BUILDINGS

3409*A*.1 Historic buildings. The provisions of this code relating to the construction, repair, *alteration*, *addition*, restoration and movement of structures, and change of occupancy shall not be mandatory for *historic buildings* where such buildings are judged by the *building official* to not constitute a distinct life safety hazard.

3409*A*.2 Flood hazard areas. Within flood hazard areas established in accordance with Section 1612.3, where the work proposed constitutes substantial improvement as defined in Section 1612.2, the building shall be brought into compliance with Section 1612.

Exception: *Historic buildings* that are:

1. *Listed* or preliminarily determined to be eligible for listing in the National Register of Historic Places;
2. Determined by the Secretary of the U.S. Department of Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district; or
3. Designated as historic under a state or local historic preservation program that is *approved* by the Department of Interior.

SECTION 3410*A*
MOVED STRUCTURES

3410*A*.1 Conformance. Structures moved into or within the jurisdiction shall comply with the provisions of this code for new structures.

SECTION 3411A
ADDITIONS, ALTERATIONS, REPAIRS AND SEISMIC RETROFIT TO EXISTING BUILDINGS OR STRUCTURES DESIGNED IN ACCORDANCE WITH PRE-1973 BUILDING CODE

3411A.1 General. *Provisions of this section shall apply to hospital buildings which were originally designed to pre-1973 building code and not designated as SPC 3 or higher in accordance with Chapter 6, Part 1, Title 24.*

3411A.1.1 Incidental and minor structural alterations, additions or repairs. *Incidental and minor structural additions shall be permitted provided the additions meet this code for new construction using importance factor, I, equal to or greater than 1.0. Alterations or repairs to the existing affected lateral load-resisting elements shall meet the requirements of Sections 3404A or 3405A respectively using importance factor, I, equal to or greater than 1.0.*

3411A.1.2 Minor structural alteration, additions or repairs. *Minor structural additions shall be permitted provided the additions meet this code for new construction using importance factor, I, equal to or greater than 1.0. Alterations, or repair to existing gravity and lateral load-resisting systems shall be made to conform to the requirements of Sections 3404A or 3405A respectively.*

3411A.1.3 Major structural alteration, additions or repairs. *Major structural alterations, additions or repairs shall be in accordance with Section 3403A, 3404A or 3405A respectively.*

SECTION 3412A
COMPLIANCE ALTERNATIVES FOR ADDITIONS, ALTERATIONS, REPAIRS AND SEISMIC RETROFIT TO EXISTING STRUCTURES

3412A.1 Adoption of ASCE 41. *Except for the modifications as set forth in Sections 3412A and 3413A all additions, alterations, repairs and seismic retrofit to existing structures or portions thereof shall be permitted to be designed in accordance with the provisions of ASCE 41.*

3412A.1.1 ASCE 41 Section 1.4 – Rehabilitation Objectives. *Target building performance level shall be as follows:*

a. For general acute care hospitals along with all structures required for their continuous operation or access/egress – *Immediate Occupancy (IO) Structural Performance Level (S-1) as defined in Section 1.5.1.1 at Basic Safety Earthquake 1 (BSE-1) Seismic Hazard Level as defined in Section 1.6.1.2 and Collapse Prevention (CP) Structural performance level (S-5) per Section 1.5.1.5 at Basic Safety Earthquake 2 (BSE-2) Seismic Hazard Level as defined in Section 1.6.1.1. The nonstructural performance level shall satisfy the requirements of this code for new hospital buildings.*

Exceptions: *Buildings satisfying requirements of Sections 3411A or 3412A.2.*

b. For pre-1973 buildings which will not be used for general acute care services after January 1, 2030 – *Basic Safety Objective (BSO) Level as defined in Section 1.4.1. BSO level includes Life Safety Building Performance (3-C) Level as defined in Section 1.5.3.3 at the Basic Safety Earthquake 1 (BSE-1) Seismic Hazard Level as defined in section 1.6.1.2 and Col-*

lapse Prevention (CP) building performance level (5-E) per Section 1.5.3.4 at the Basic Safety Earthquake 2 (BSE-2) Seismic Hazard Level as defined in Section 1.6.1.1.

Exceptions: *Buildings satisfying requirements of Sections 3411A or 3412A.2.*

c. All Others – *Immediate Occupancy (IO) Building Performance Level of (1-B) as defined in Section 1.5.3.2 at Basic Safety Earthquake 1 (BSE-1) Seismic Hazard Level as defined in Section 1.6.1.2 and Collapse Prevention (CP) building performance level (5-E) per Section 1.5.3.4 at Basic Safety Earthquake 2 (BSE-2) Seismic Hazard Level as defined in Section 1.6.1.1.*

3412A.1.2 Material testing required*. Use of material properties based on historical information as default values shall not be permitted.*

3412A.1.3 Analysis procedure. *The selection of a particular analysis procedure from ASCE 41 shall be subject to the approval of the enforcement agent.*

3412A.1.4 Structural design criteria. *Prior to implementation of ASCE 41 Nonlinear Dynamic Procedure, the ground motion, analysis and design methods, material assumptions and acceptance criteria proposed by the engineer shall be reviewed by the enforcement agent.*

3412A.1.5 Structural observation, testing and inspections. *Construction, testing, inspection and structural observation requirements shall be as required for new construction.*

3412A.2 Seismic evaluation and retrofit of general acute care hospitals. *Not withstanding any other requirements of this code, all existing general acute care hospitals shall comply with the requirements specified in Chapter 6, Part 1, Title 24.*

3412A.2.1 SPC 5 and NPC 4/NPC 5. *Structures and nonstructural components and systems satisfying the requirements of this code for new buildings for Occupancy Category IV shall be considered to satisfy the requirements of SPC 5 and NPC 4. NPC 4 buildings satisfying operational requirements for NPC 5 of Table 11.1, Chapter 6, Part 1, Title 24, shall be placed in nonstructural performance category NPC 5.*

3412A.2.2 SPC 5 using ASCE 41. *Structures satisfying the requirements of immediate occupancy structural performance level (S-1) per Section 1.5.1.1 of ASCE 41 at BSE-1, Collapse prevention performance level S-5 per Section 1.5.1.5 of ASCE 41 at BSE-2 and items identified in Chapter 6, Article 10, Part 1, Title 24, satisfying the requirements of Immediate Occupancy Nonstructural performance level (N-B) per Section 1.5.2.2 of ASCE 41 at BSE-1 shall be considered to comply with SPC 5 requirements of Table 2.5.3, Chapter 6, Part 1, Title 24.*

3412A.2.3 SPC 2 using ASCE 41. *Structures satisfying the requirements of life safety structural performance level (S-3) per Section 1.5.1.3 of ASCE 41 at BSE-1 and items identified in Chapter 6, Article 10, Title 24, Part 1 satisfying the requirements of life safety nonstructural performance level (N-C) per Section 1.5.2.3 of ASCE 41 at BSE-1, shall be considered to comply with SPC 2 requirements of Table 2.5.3, Chapter 6, Part 1, Title 24.*

3412A.2.4 NPC. *Nonstructural components for immediate occupancy nonstructural performance level (N-B) in Section 1.5.2.2 shall meet the requirements of this code for new buildings. Nonstructural components for operational nonstructural performance level (N-A) in Section 1.5.2.1 shall meet performance level N-B and Section 3413A.1.30. Building satisfying the requirements of nonstructural performance level N-A and N-B as described in this section shall be considered to satisfy the requirements of NPC 5 & NPC 4 of Table 11.1, Chapter 6, Part 1, Title 24 respectively.*

Immediate occupancy nonstructural performance level (N-B) in Section 1.5.2.2 and life safety nonstructural performance level (N-C) in Section 1.5.2.3 of ASCE 41 at BSE-1 shall be considered equivalent to NPC 3/NPC 2 and NPC 3R requirements respectively of Table 11.1, Chapter 6, Part 1, Title 24. For NPC 3/NPC 3R/NPC 2, only components listed in Table 11.1, Chapter 6, Part 1, Title 24, for NPC 3/NPC 3R/NPC 2 need to satisfy the requirements specified above.

Exceptions:

1) *Evaluation procedure in Article 11, Chapter 6, Part 1, Title 24 shall be used for seismic evaluation of NPC 2, NPC 3/NPC 3R, NPC 4 and NPC 5, where specific procedure is not outlined in ASCE 41. Administrative and permitting provisions outlined in Article 11, Chapter 6, Part 1, Title 24 shall apply.*
2) *Anchorage and bracing of nonstructural components in buildings in seismic performance categories SPC 1 and SPC 2 with a performance level of NPC 3R may comply with the provisions of Section 1630A of the 1995 California Building Code using an importance factor I_p =1.0. The capacity of welds, anchors and fasteners shall be determined in accordance with requirements of this code.*
3) *Anchorage and bracing of nonstructural components in buildings in seismic performance categories SPC 1 or SPC 2 with a performance level of NPC 3 or higher, and SPC 3 or SPC 4, may comply with the provisions of Section 1630B of the 1998 California Building Code using an importance factor I_p =1.5. The capacity of welds, anchors and fasteners shall be determined in accordance with requirements of this code.*

A continuous load path of sufficient strength and stiffness between the component and the supporting structure shall be verified. Local elements of the supporting structure shall be verified for the component loads where they control the design of the elements or their connections. Increases in F_p due to anchorage conditions (for example shallow anchors) need not be considered. For NPC 3R, the adequacy of load path for nonstructural elements need only be verified when the total reaction at the point of support (including the application of F_p) exceeds the following limits:

1. *250 pounds for components or equipment attached to light frame walls. For the purposes of this requirement, the sum of the absolute value of all reactions due to component loads on a single stud shall not exceed 250 pounds.*
2. *1,000 pounds for components or equipment attached to roofs, or walls of reinforced concrete or masonry construction.*
3. *2,000 pounds for components or equipment attached to floors or slabs-on-grade.*

***Exception:** If the anchorage or bracing is configured in a manner that results in significant torsion on a supporting structural element, the effects of the nonstructural reaction force on the structural element shall be considered in the anchorage design.*

SECTION 3413A
MODIFICATIONS TO ASCE 41

***3413A.1 General.** The text of ASCE 41 shall be modified as indicated in Sections 3413A.1.1 through 3413A.1.32.*

***3413A.1.1 ASCE 41 Section 1.1.** Modify ASCE 41 Section 1.1 with the following:*

Seismic evaluations shall be performed using procedure and criteria of ASCE 41 except for general acute care hospitals, which shall be evaluated per Chapter 6, Part 1, Title 24 when required per provision of that chapter.

***3413A.1.2 ASCE 41 Section 1.6 Seismic Hazard.** Modify ASCE 41 Section 1.6 with the following:*

Response spectra and acceleration time histories shall be constructed in accordance with Sections 1613A, 1615A and 1803A.6. Basic Safety Earthquake 2 (BSE-2) in ASCE 41 shall be same as Maximum Considered Earthquake (MCE) in ASCE 7.

***3413A.1.3 ASCE 41 Section 2.2.6.** Modify ASCE 41 Section 2.2.6 with the following:*

***Data collection requirements.** The extent of data collection shall be at Comprehensive level for all structures except that data collection at Usual level shall be permitted for structures with BSO or lower target performance objective. Materials properties testing program shall be pre-approved by the enforcement agent.*

For buildings, built under an OSHPD permit based on the 1976 or later edition of the CBC, where materials properties are shown on design drawings and original materials test data are available, no materials testing shall be required when approved by the enforcement agent.

***3413A.1.4 ASCE 41 Section 2.4.1.1.** Modify ASCE 41 Section 2.4.1.1 with the following:*

1. *If one or more component DCRs exceed 1.5 for the Immediate Occupancy Structural Performance Level (S-1) or 2.0 for the Life Safety Structural Performance level (S-3) and any irregularity described in Section 2.4.1.1.1 through 2.4.1.1.4 is present, then linear procedures are not applicable and shall not be used.*
2. *Linear procedures are not applicable to moment resisting frames where plastic hinges do not form in either the beam at the face of column or in the column panel zone.*

***3413A.1.5 ASCE 41 Section 2.4.2.1.** Modify ASCE 41 Section 2.4.2.1 with the following:*

***Nonlinear static procedure.** If higher mode effects are significant and building is taller than 75 feet above the base, the Nonlinear Dynamic Procedure shall be used.*

***3413A.1.6 ASCE 41 Section 2.4.4.5.** Modify ASCE 41 Section 2.4.4.5 by the following:*

***Material properties.** Expected material properties are not permitted to be determined by multiplying lower bound values by the assumed factors specified in Chapters 5 through 8.*

***3413A.1.7 ASCE 41 Section 3.2.10.1.** Modify ASCE 41 Section 3.2.10.1 with the following:*

***Linear procedures.** Equation 3-5 is not permitted by OSHPD.*

***3413A.1.8 ASCE 41 Section 3.3.1.3.5.** Replace ASCE 41 Section 3.3.1.3.5 as follows:*

***Unreinforced masonry buildings.** Unreinforced Masonry not permitted by OSHPD.*

***3413A.1.9 ASCE 41 Section 3.3.3.2.2.** Modify ASCE 41 Section 3.3.3.2.2 with the following:*

***Simplified NSP Analysis.** Not permitted by OSHPD.*

***3413A.1.10 ASCE 41 Section 3.4.2.2.** Modify ASCE 41 Section 3.4.2.2 with the following:*

***Acceptance criteria for linear procedures – drift limitations.** The interstory drift ratio shall not exceed the drift limits for Occupancy Category IV buildings in ASCE 7 Table 12.12-1 due to forces corresponding to BSE-1, except that buildings designed to BSO or lower performance levels are permitted to meet the drift limits for Occupancy Category II buildings. For dual systems, the least interstory drift ratio shall control.*

***Exception:** Larger interstory drift ratios shall be permitted where justified by rational analysis that both*

3414A.6 Responses and corrective actions. *The engineer of record shall review the report from the reviewer(s) and shall develop corrective actions and other responses as appropriate. Changes observed during construction that affect the seismic-resisting system shall be reported to the reviewer in writing for review and recommendations. All reports, responses and corrective actions prepared pursuant to this section shall be submitted to the responsible enforcement agent and the owner along with other plans, specifications and calculations required. If the reviewer resigns or is terminated by the owner prior to completion of the project, then the reviewer shall submit copies of all reports, notes, and the correspondence to the responsible enforcement agent, the owner, and the engineer of record within 10 working days of such termination.*

SECTION 3415A
EARTHQUAKE MONITORING INSTRUMENTS FOR EXISTING BUILDINGS

3415A.1 Earthquake recording instrumentation of existing buildings. *All owners of existing structures, selected by the enforcement agency for the installation of earthquake-recording instruments, shall provide space for the installation and access to such instruments. Location of said instruments shall be determined by the enforcement agency. The enforcement agency shall make arrangements to provide, maintain, and service the instruments. Data shall be the property of the enforcement agency, but copies of individual records shall be made available to the public on request and the payment of an appropriate fee.*

SECTION 3416A
COMPLIANCE ALTERNATIVES FOR SERVICES/SYSTEMS AND UTILITIES

3416A.1 General. *Services/systems and utilities shall originate in and pass through or under in accordance with this section.*

3416A.1.1 Services/systems and utilities. *Services/systems and utilities that are necessary to the operation of an acute care hospital, skilled nursing facility, intermediate care facility, or correctional treatment center shall meet the structural requirements of this section. Examples of services/systems and utilities include but are not limited to normal power; emergency power; nurse call; fire alarm; communication and data systems; space-heating systems; process load systems; cooling systems; domestic hot and cold water systems; means of egress systems; fire-suppression systems; building drain and sewer systems; and medical gas systems that support basic and supplemental services.*

Services from an acute care hospital, skilled nursing facility or a correctional treatment center may serve a nonconforming building with prior approval of the Office.

Exception: *Remodel projects that use available existing services/systems and utilities are exempted from the requirements of this section. The enforcing agency may exempt minor addition, minor alteration, and minor remodel projects and projects to upgrade existing services/systems and utilities from the requirements of this section.*

3416A.1.1.1 Services/systems and utilities for hospital buildings.

3416A.1.1.1.1 New buildings, additions, alterations, and remodels of conforming (SPC-3, -4, or -5) hospital buildings. *Services/systems and utilities for new buildings and additions, and alterations or remodels to existing conforming buildings shall originate in hospital buildings that have OSHPD-approved performance categories of SPC-3 or higher and NPC-4 or higher. The services/systems and utilities shall not pass through or under buildings that do not have OSHPD-approved performance categories of SPC-2 or higher and NPC-4 or higher.*

Exceptions:

1. *Remodel and alteration projects that use available existing services/systems and utilities are exempted from these requirements.*
2. *Services/systems and utilities may pass through or under buildings that have OSHPD-approved nonstructural performance categories of NPC-2 or NPC-3, provided that the services/systems and utilities feeding the new building addition, alteration, or remodel conform with ASCE 7, Chapter 13 as modified by Section 1615A and are deemed by OSHPD to be free of adverse seismic interactions caused by potential failure of overhead or adjacent components.*

3416A.1.1.1.2 Additions, alterations, and remodels of SPC-2 hospital buildings. *Services/systems and utilities for additions, alterations, or remodels of SPC-2 hospital buildings may originate in and pass through or under SPC-2 or better buildings that have an OSHPD-approved nonstructural performance category of NPC-3 or higher.*

Exception: *Services/systems and utilities may pass through or under buildings that have OSHPD-approved nonstructural performance categories of NPC-2, provided that the services/systems and utilities feeding the addition, alteration or remodel conform with ASCE 7, Chapter 13 as modified by Section 1615A and are deemed by OSHPD to be free of adverse seismic interactions caused by potential failure of overhead or adjacent components.*

3416A.1.1.1.3 Alterations and remodels of SPC-1 hospital buildings. *Services/systems and utilities for alterations or remodels of SPC-1 hospital buildings may originate in and pass through or under SPC-1 or better buildings that have an OSHPD-approved nonstructural performance category of NPC-2 or higher.*

3416A.1.1.1.4 Buildings without SPC/NPC ratings. *When services/systems and utilities for new buildings, additions, alterations, or remodels pass through or under hospital buildings which would not otherwise require evaluation for an SPC rating, such buildings shall be evaluated in accordance with the requirements of Section 1.3, Chapter 6, Part 1, California Administrative Code, to determine the appropriate ratings, or shall be shown to meet the structural requirements of these regulations for new hospital buildings. The services/systems and utilities feeding the new building addition, alteration, or remodel shall conform with ASCE 7, Chapter 13 as modified by Section 1615A and shall be deemed by OSHPD to be free of adverse seismic interactions caused by potential failure of overhead or adjacent components.*

3416A.1.1.1.5 Buildings removed from acute-care hospital service. *Services/systems and utilities for conforming acute care hospital buildings may pass through or under a building that has been removed from acute care hospital service until January 1, 2030 if the building removed from service remains under the jurisdiction of OSHPD and meets the performance requirements of Section 3416A.1.1.1.1. Services/systems and utilities for nonconforming acute care hospital buildings may pass through or under a building that has been removed from acute care hospital service only if the building removed from service remains under the jurisdiction of OSHPD and meets the performance requirements of Section 3416A.1.1.1.2.*

Exception: *Service/system and utilities for acute care hospital buildings may pass through or under the buildings that have been removed from acute care service and which do not meet the performance requirements of Section 3416A.1.1.1.1 or Section 3416A.1.1.1.2, provided all of the following are met:*

1. *The hospital has obtained an approved extension to the 2008 deadlines in accordance with Section 1.5.2, Article 1, Chapter 6 California Administrative Code.*
2. *The extensions request specifically includes a request to allow services/systems and utilities to pass through or under the building removed from acute care service. The services/systems and utilities may pass through or under the building for the duration of the extension.*
3. *The building removed from acute care service remains under the jurisdiction of OSHPD.*

After January 1, 2030, services/systems and utilities for acute care hospital buildings shall not originate in or pass through or under a nonhospital building unless it has OSHPD-approved performance categories of SPC-3 or better and NPC-4 or better, and the non-hospital building remains under the jurisdiction of OSHPD.

3416A.1.1.2 Services/systems and utilities for skilled nursing facilities, intermediate care facilities, and correctional treatment centers.

3416A.1.1.2.1 New buildings and additions. *Services/systems and utilities for new buildings and additions shall not originate in or pass through or under nonconforming structures. The structures must be under the jurisdiction of OSHPD.*

Exception: *As an alternate to this section, skilled nursing and intermediate care facilities, and correctional treatment centers may meet the requirements in Section 3416A.1.1.1 for hospital buildings.*

3416A.1.1.2.2 Alterations and remodels. *Services/systems and utilities for alterations or remodels of existing buildings may pass through nonconforming structures, provided that the structure is under the jurisdiction of OSHPD, and the new services/systems and utilities passing through the buildings are anchored and braced for seismic forces in accordance with these regulations for new buildings and are free of adverse seismic interactions caused by potential failure of overhead or adjacent components.*

SECTION 3417A COMPLIANCE ALTERNATIVES FOR MEANS OF EGRESS

3417A.1 General. *Means of egress through existing buildings shall be in accordance with Chapter 10 and this section.*

3417A.1.1 Means of egress for hospitals, skilled nursing facilities, intermediate care facilities and correctional treatment centers. *Means of egress for acute care hospitals, skilled nursing facilities, intermediate care facilities and correctional treatment centers shall comply with the requirements of Sections 3417A.1.1.1 and 3417A.1.1.2.*

Exception: *The enforcing agency may exempt minor additions, minor alterations and minor remodel projects from these requirements.*

3417A.1.1.1 Means of egress for hospital buildings. *Means of egress for hospital buildings shall comply with the requirements of Sections 3417A.1.1.1.1 through 3417A.1.1.1.6.*

3417A.1.1.1.1 New and existing conforming hospital buildings. *Means of egress for new hospital buildings and additions to existing conforming hospital buildings shall only pass through buildings that comply with the requirements of SPC-3 or higher and NPC-4 or higher.*

3417A.1.1.1.2 Existing SPC-2 hospital buildings. *Means of egress for additions to existing SPC-2 hospital buildings shall only pass through hospital buildings that have OSHPD-approved performance categories of SPC-2 or higher and NPC-4 or higher.*

Exception: *The means of egress may pass through hospital buildings that have OSHPD-approved performance categories of SPC-2 or higher and NPC-2 or higher, provided the nonstructural components in the path of egress are braced in accordance with the requirements of ASCE 7, Chapter 13 as modified by Section 1615A.*

3417A.1.1.1.3 Existing SPC-3 or higher hospital buildings. *Means of egress for remodels of existing SPC-3 or higher hospital buildings shall only pass through hospital buildings that have OSHPD-approved performance categories of SPC-2 or higher and NPC-4 or higher.*

Exception: *The means of egress may pass through hospital buildings that have OSHPD-approved performance categories of SPC-2 or higher and NPC-2 or higher, provided the nonstructural components in the path of egress are braced in accordance with the requirements of ASCE 7, Chapter 13 as modified by Section 1615A.*

3417A.1.1.1.4 Existing SPC-1 hospital buildings. *Means of egress for remodels of existing SPC-1 hospital buildings shall only pass through hospital buildings that have OSHPD-approved performance categories of SPC-1 or higher and NPC-2 or higher.*

Exception: *Means of egress for acute care service spaces for hospitals licensed pursuant to subdivision (a) of Section 1250 of the Health and Safety Code shall comply with the requirements of Section 3417A.1.1.1.2.*

3417A.1.1.1.5 Other non-conforming hospital buildings. *Hospital buildings that would not otherwise require evaluation for an SPC rating, which are used as a part of the means of egress for acute care hospitals, shall be evaluated in accordance with the requirements of Section 1.3, Chapter 6, Part 1, CCR to determine the appropriate rating, or shall meet the structural requirements of these regulations for conforming hospital buildings. Means of egress shall be in accordance with the requirements of Sections 3417A.1.1.1.1 through 3417A.1.1.1.4.*

3417A.1.1.1.6 Buildings removed from hospital service. *The means of egress for acute care hospitals may pass through buildings that are removed from hospital service only if the buildings remain under the jurisdiction of OSHPD, and only until January 1, 2030, subject to the following:*

1. *Egress for conforming hospital buildings may pass through buildings that have been removed from acute care hospital service that comply with the requirements of Section 3417A.1.1.1.1 or 3417A.1.1.1.3.*
2. *Egress for nonconforming hospital buildings may pass through buildings that have been removed from acute care hospital service that comply with the requirements of Section 3417A.1.1.1.2 or 3417A.1.1.1.4.*

After January 1, 2030, the means of egress for acute care hospital buildings shall only pass through hospital buildings that have OSHPD-approved performance categories of SPC-3 or higher and NPC-4 or higher.

3417A.1.1.2 Means of egress for skilled nursing facilities, intermediate care facilities and correctional treatment centers. *Means of egress for skilled nursing facilities, intermediate-care facilities and correctional treatment centers shall comply with the requirements of Sections 3417.1.1.2.1 and 3417.1.1.2.2.*

3417A.1.1.2.1 New facilities or additions to existing facilities. *Means of egress for new or additions to skilled nursing facilities, intermediate care facilities, or correctional treatment centers shall only pass through conforming buildings.*

Exception: *As an alternate, skilled nursing facilities, intermediate care facilities and correctional treatment centers may meet the egress requirements in Sections 3417A.1.1.1.1 through 3417A.1.1.1.5 for hospital buildings.*

3417A.1.1.2.2 Jurisdiction. *Means of egress for skilled nursing facilities and intermediate-care facilities shall only pass through buildings that are under the jurisdiction of the Office of Statewide Health Planning and Development (OSHPD).*

CALIFORNIA BUILDING CODE-MATRIX ADOPTION TABLE
CHAPTER 35 – REFERENCED STANDARDS

Adopting agency	BSC	SFM	HCD			DSA			OSHPD				CSA	DPH	AGR	DWR	CEC	CA	SL	SLC
			1	2	1-AC	AC	SS	SS/CC	1	2	3	4								
Adopt entire chapter	X								X	X	X	X								
Adopt entire chapter as amended (amended sections listed below)		X	X	X	X		X	X												
Adopt only those sections that are listed below						X														
Chapter/Section																				
ACI							X	X												
AISC							X	X												
AITC							X	X												
ANSI						X														
ASCE/SEI							X	X												
ASME						X														
ASME A17.1/CSA B44-07		X																		
ASME BPE-2009		X																		
ASTM							X	X												
ASTM E648-04		X																		
ASTM E662-09		X																		
AWS							X	X												
BHMA						X														
CPSC						X														
FM3260-00		X																		
FM3011-99		X																		
FM4430-80		X																		
ICC							X	X												
ICC ES AC 331		X																		
ICC ES AC 77		X																		
NFPA						X	X	X												
NFPA 720			X	X	X															
NFPA 13-10		X																		
NFPA 13D-10		X																		
NFPA 13R-10		X																		
NFPA 14-07		X																		
NFPA 15-01		X																		
NFPA 22-03		X																		
NFPA 24-10		X																		
NFPA 37-06		X																		
NFPA 50-01		X																		
NFPA 54-09		X																		
NFPA 57-02		X																		
NFPA 72-10		X																		
NFPA 92a-09		X																		

(continued)

CALIFORNIA BUILDING CODE-MATRIX ADOPTION TABLE
CHAPTER 35 – REFERENCED STANDARDS—continued

Adopting agency			HCD			DSA			OSHPD											
	BSC	SFM	1	2	1-AC	AC	SS	SS/CC	1	2	3	4	CSA	DPH	AGR	DWR	CEC	CA	SL	SLC
Adopt entire chapter	X								X	X	X	X								
Adopt entire chapter as amended (amended sections listed below)		X	X	X	X		X	X												
Adopt only those sections that are listed below																				
Chapter/Section		X																		
NFPA 170-06		X																		
PCI							X	X												
PTI							X	X												
SFM 12-3		X																		
SFM 12-7-3		X																		
SFM 12-7A-1		X																		
SFM 12-7A-2		X																		
SFM 12-7A-3		X																		
SFM 12-7A-4		X																		
SFM 12-7A-4A		X																		
SFM 12-7A-5		X																		
SFM 12-8-100		X																		
SFM 12-10-1		X																		
SFM 12-10-2		X																		
SFM 12-10-3		X																		
UBC 15-2		X																		
UBC 15-3		X																		
UBC 15-4		X																		
UL 13-96		X																		
UL 38-99		X																		
UL 193-04		X																		
UL 199-95		X																		
UL 228-97		X																		
UL 260-04		X																		
UL 262-04		X																		
UL 268A-98		X																		
UL 312-04		X																		
UL 346-05		X																		
UL 464-03		X																		
UL 497B-04		X																		
UL 521-99		X																		
UL 539-00		X																		
UL 632-00		X																		
UL 753-04		X																		
UL 813-96		X																		
UL 864-03		X																		
UL 2034			X	X	X															

The Office of the State Fire Marshal's adoption of this chapter or individual sections is applicable to structures regulated by other state agencies pursuant to Section 1.11.

ASME

American Society of Mechanical Engineers
Three Park Avenue
New York, NY 10016-5990

Standard reference number	Title	Referenced in code section number
A17.1/CSA B44—2007	Safety Code for Elevators and Escalators	1607.8.1, 1613.6.5
A18.1—2005	Safety Standard for Platform Lifts and Stairway Chairlifts	*1116B.2.1*, 2702.2.6, 3411.8.3
A90.1—03	Safety Standard for Belt Manlifts	3001.2
B16.18—2001 (Reaffirmed 2005)	Cast Copper Alloy Solder Joint Pressure Fittings	909.13.1
B16.22—2001 (Reaffirmed 2005)	Wrought Copper and Copper Alloy Solder Joint Pressure Fittings	909.13.1
B20.1—2006	Safety Standard for Conveyors and Related Equipment	3001.2, 3005.3
BPE—2009	*Bio-processing Equipment Standard*	
B31.3—2004	Process Piping	415.8.6.1

ASTM

ASTM International
100 Barr Harbor Drive
West Conshohocken, PA 19428-2959

Standard reference number	Title	Referenced in code section number
A 36/A 36M—05	Specification for Carbon Structural Steel	1810.3.2.3
A 153/A 153M—05	Specification for Zinc Coating (Hot-dip) on Iron and Steel Hardware	2304.9.5
A 240/A 240M—07	Standard Specification for Chromium and Chromium-nickel Stainless Steel Plate, Sheet and Strip for Pressure Vessels and for General Applications	Table 1507.4.3(1)
A 252—98 (2002)	Specification for Welded and Seamless Steel Pipe Piles	1810.3.2.3
A 283/A 283M—03	Specification for Low and Intermediate Tensile Strength Carbon Steel Plates	1810.3.2.3
A 307—04e01	Specification for Carbon Steel Bolts and Studs, 60,000 psi Tensile Strength	1911.1
A 416/A 416M—06	Specification for Steel Strand, Uncoated Seven-wire for Prestressed Concrete	1810.3.2.2
A 463/A 463M—05	Standard Specification for Steel Sheet, Aluminum-coated, by the Hot-dip Process	Table 1507.4.3(2)
A 572/A 572M—07	Specification for High-strength Low-alloy Columbium-vanadium Structural Steel	1810.3.2.3
A 588/A 588M—05	Specification for High-strength Low-alloy Structural Steel with 50 ksi (345 MPa) Minimum Yield Point to 4 inches (100 mm) Thick	1810.3.2.3
A 615/A 615M—04a	Specification for Deformed and Plain Billet-steel Bars for Concrete Reinforcement	1708.2, 1810.3.10.2
A 653/A 653M—07	Specification for Steel Sheet, Zinc-coated Galvanized or Zinc-iron Alloy-coated Galvannealed by the Hot-dip Process	Table 1507.4.3(1), Table 1507.4.3(2), 2304.9.5.1
A 690/A 690M—07	Standard Specification for High-strength Low-alloy Nickel, Copper, Phosphorus Steel H-piles and Sheet Piling with Atmospheric Corrosion Resistance for Use in Marine Environments	1810.3.2.3
A 706/A 706M—05a	Specification for Low-alloy Steel Deformed and Plain Bars for Concrete Reinforcement	Table 1704.3, 1704.4.1, 2107.4, 2108.3
A 722/A 722M—07	Specification for Uncoated High-strength Steel Bar for Prestressing Concrete	1810.3.10.2
A 755/A 755M—03	Specification for Steel Sheet, Metallic-coated by the Hot-dip Process and Prepainted by the Coil-coating Process for Exterior Exposed Building Products	Table 1507.4.3(1), Table 1507.4.3(2)
A 792/A 792M—06a	Specification for Steel Sheet, 55% Aluminum-zinc Alloy-coated by the Hot-dip Process	Table 1507.4.3(1), Table 1507.4.3(2)
A 875/A 875M—06	Standard Specification for Steel Sheet Zinc-5 percent, Aluminum Alloy-coated by the Hot-dip Process	Table 1507.4.3(2)
A 913/A 913M—04	Specification for High-strength Low-alloy Steel Shapes of Structural Quality, Produced by Quenching and Self-tempering Process (QST)	1810.3.2.3
A 924/A 924M—07	Standard Specification for General Requirements for Steel Sheet, Metallic-coated by the Hot-dip Process	Table 1507.4.3(1)
A 992/A 992M—06a	Standard Specification for Structural Shapes	1810.3.2.3
B 42—02e01	Specification for Seamless Copper Pipe, Standard Sizes	909.13.1
B 43—98(2004)	Specification for Seamless Red Brass Pipe, Standard Sizes	909.13.1
B 68—02	Specification for Seamless Copper Tube, Bright Annealed (Metric)	909.13.1
B 88—03	Specification for Seamless Copper Water Tube	909.13.1
B 101—02	Specification for Lead-coated Copper Sheet and Strip for Building Construction	Table 1404.5.3, Table 1507.2.9.2, Table 1507.4.3(1)
B 209—06	Specification for Aluminum and Aluminum Alloy Steel and Plate	Table 1507.4.3(1)
B 251—02e01	Specification for General Requirements for Wrought Seamless Copper and Copper-alloy Tube	909.13.1

ASTM—continued

B 280—03	Specification for Seamless Copper Tube for Air Conditioning and Refrigeration Field Service	909.13.1
B 370—03	Specification for Cold-rolled Copper Sheet and Strip for Building Construction	1404.5.2, Table 1507.2.9.2, Table 1507.4.3(1)
B 695—04	Standard Specification for Coatings of Zinc Mechanically Deposited on Iron and Steel	2304.9.5.1, 2304.9.5.3
C 5—03	Specification for Quicklime for Structural Purposes	Table 2507.2
C 22/C 22M—00 (2005)e01	Specification for Gypsum	Table 2506.2
C 27—98 (2002)	Specification for Standard Classification of Fireclay and High-alumina Refractory Brick	2111.5
C 28/C 28M—00 (2005)	Specification for Gypsum Plasters	Table 2507.2
C 31/C 31M—06	Practice for Making and Curing Concrete Test Specimens in the Field	Table 1704.4
C 33—03	Specification for Concrete Aggregates	721.3.1.4, 721.4.1.1.3
C 34—03	Specification for Structural Clay Load-bearing Wall Tile	2103.2
C 35—01(2005)	Specification for Inorganic Aggregates for Use in Gypsum Plaster	Table 2507.2
C 36/C 36M—03	Specification for Gypsum Wallboard	Figure 721.5.1(2), Figure 721.5.1(3), Table 2506.2
C 37/C 37M—01	Specification for Gypsum Lath	Table 2507.2
C 55—06e01	Specification for Concrete Building Brick	Table 721.3.2, 2103.1, 2105.2.2.1.2
C 56—05	Specification for Structural Clay Nonload Bearing Tile	2103.2
C 59/C 59M—00 (2006)	Specification for Gypsum Casting and Molding Plaster	Table 2507.2
C 61/C 61M—00 (2006)	Specification for Gypsum Keene's Cement	Table 2507.2
C 62—05	Specification for Building Brick (Solid Masonry Units Made from Clay or Shale)	1807.1.6.3, 2103.2, 2105.2.2.1.1
C 67—07	Test Methods of Sampling and Testing Brick and Structural Clay Tile	721.4.1.1.1, 2109.3.1.1
C 73—05	Specification for Calcium Silicate Face Brick (Sand-lime Brick)	Table 721.3.2, 2103.1
C 79—04a	Specification for Treated Core and Nontreated Core Gypsum Sheathing Board	Table 2506.2
C 90—06b	Specification for Loadbearing Concrete Masonry Units	Table 721.3.2, 1807.1.6.3, 2103.1
C 91—05	Specification for Masonry Cement	Table 2507.2
C 94/C 94M—07	Specification for Ready-mixed Concrete	110.3.1
C 126—99 (2005)	Specification for Ceramic Glazed Structural Clay Facing Tile, Facing Brick and Solid Masonry Units	2103.2
C 140—07	Test Method Sampling and Testing Concrete Masonry Units and Related Units	721.3.1.2
C 144-04	*Standard Specification for Aggregate for Masonry Mortar*	*2103A.8*
C 150—07	Specification for Portland Cement	Table 2507.2
C 172—04	Practice for Sampling Freshly Mixed Concrete	Table 1704.4
C 199—84 (2005)	Test Method for Pier Test for Refractory Mortars	2111.5, 2111.8, 2113.12
C 206—03	Specification for Finishing Hydrated Lime	Table 2507.2
C 208—95 (2001)	Specification for Cellulosic Fiber Insulating Board	Table 1508.2, 2303.1.5
C 212—00 (2006)	Specification for Structural Clay Facing Tile	2103.2
C 216—07	Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)	1807.1.6.3, 2103.2, 2105.2.2.1.1
C 270—07	Specification for Mortar for Unit Masonry	2103.8
C 289—07	*Standard Test Method for Potential Alkali-Silica Reactivity of Aggregates*	*1916.1.3, 1903A.3*
C 315—07	Specification for Clay Flue Liners and Chimney Pots	2111.8, 2113.11, Table 2113.16(1)
C 317/C 317M—00 (2005)	Specification for Gypsum Concrete	1914.1
C 330—05	Specification for Lightweight Aggregates for Structural Concrete	721.1.1
C 331—05	Specification for Lightweight Aggregates for Concrete Masonry Units	721.3.1.4, 721.4.1.1.3
C 406—06e01	Specification for Roofing Slate	1507.7.5
C 442/C 442M—04	Specification for Gypsum Backing Board and Coreboard and Gypsum Shaftliner Board	Table 2506.2
C 472—99 (2004)	Specification for Standard Test Methods for Physical Testing of Gypsum, Gypsum Plasters and Gypsum Concrete	Table 2506.2
C 473—06a	Test Method for Physical Testing of Gypsum Panel Products	Table 2506.2
C 474—05	Test Methods for Joint Treatment Materials for Gypsum Board Construction	Table 2506.2
C 475—05	Specification for Joint Compound and Joint Tape for Finishing Gypsum Wallboard	Table 2506.2
C 503—05	Specification for Marble Dimension Stone (Exterior)	2103.4
C 514—04	Specification for Nails for the Application of Gypsum Board	Table 720.1(2), Table 720.1(3), Table 2306.7, Table 2506.2
C 516—02	Specifications for Vermiculite Loose Fill Thermal Insulation	721.3.1.4, 721.4.1.1.3
C 547—06	Specification for Mineral Fiber Pipe Insulation	Table 720.1(2), Table 720.1(3)
C 549—06	Specification for Perlite Loose Fill Insulation	721.3.1.4, 721.4.1.1.3
C 552—03	Standard Specification for Cellular Glass Thermal Insulation	Table 1508.2
C 557—03e01	Specification for Adhesives for Fastening Gypsum Wallboard to Wood Framing	Table 2506.2
C 568—03	Specification for Limestone Dimension Stone	2103.4
C 578—07	Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation	Table 1508.2
C 587—04	Specification for Gypsum Veneer Plaster	Table 2507.2
C 588/C 588M—01	Specification for Gypsum Base for Veneer Plasters	Table 2507.2

HUD

U.S. Department of Housing and Urban Development
451 7th Street, SW
Washington, DC 20410

Standard reference number	Title	Referenced in code section number
HUD 24 CFR Part 3280 (1994)	Manufactured Home Construction and Safety Standards	G201

ICC

International Code Council, Inc.
500 New Jersey Ave, NW
6th Floor
Washington, DC 20001

Standard reference number	Title	Referenced in code section number
ICC 300—07	ICC Standard on Bleachers, Folding and Telescopic Seating and Grandstands	1028.1.1, Table 1607.1, 3401.1
ICC 400—07	Standard on Design and Construction of Log Structures	2301.2
ICC 500—08	ICC/NSSA Standard on the Design and Construction of Storm Shelters	423.1, 423.2
ICC 600—08	Standard for Residential Construction in High Wind Regions	1609.1.1, 1609.1.1.1, 2308.2.1
ICC ES AC 331	*Acceptance Criteria for Smoke and Heat Vents*	*910.3.1*
ICC ES AC77	*Acceptance Criteria for Smoke Containment Systems Used with Fire-resistance-rated Elevator Hoistway Doors and Frames*	*707.14.1*
*ICC-ES AC 01—09**	*Acceptance Criteria for Expansion Anchors in Masonry Elements*	*1615A.1.14*
*ICC-ES AC 43—09**	*Acceptance Criteria for Steel Deck Roof and Floor Systems*	*2209A.3*
*ICC-ES AC 58—09**	*Acceptance Criteria for Adhesive Anchors in Masonry Elements*	*1615A.1.14*
*ICC-ES AC 70—09**	*Acceptance Criteria for Fasteners Power-Driven into Concrete, Steel and Masonry Elements*	*1911A.1.1*
*ICC-ES AC 106—09**	*Acceptance Criteria for Predrilled Fasteners (Screw Anchors) in Masonry*	*1615A.1.14*
*ICC-ES AC 125—09**	*Acceptance Criteria for Concrete, and Reinforced and Unreinforced Masonry Strengthening Using Externally Bonded Fiber-Reinforced Polymer (FRP) Composite Systems*	*1917A.3*
*ICC-ES AC 178—09**	*Acceptance Criteria for Inspection and Verification of Concrete, and Reinforced and Unreinforced Masonry Strengthening Using Fiber-Reinforced Polymer (FRP) Composite Systems*	*1917A.3*
*ICC-ES AC 193—09**	*Acceptance Criteria for Mechanical Anchors in Concrete Elements*	*1615A.1.14, 1912A.1.1*
ICC-ES AC 308—09	*Acceptance Criteria for Post-Installed Adhesive Anchors in Concrete Elements*	*1615A.1.14, 1912A.1.1*
*ICC-ES AC 358-09**	*Acceptance Criteria for Helical Foundation Systems and Devices*	*1810A.3.1.5.1*
SBCCI SSTD 11—97	Test Standard for Determining Wind Resistance of Concrete or Clay Roof Tiles	1716.2.1, 1716.2.2

** Refers to International Building Code, 2009 as a reference standard.*

ISO

International Organization for Standardization
ISO Central Secretariat
1 ch, de la Voie-Creuse, Case Postale 56
CH-1211 Geneva 20, Switzerland

Standard reference number	Title	Referenced in code section number
ISO 8115—86	Cotton Bales–Dimensions and Density	Table 415.8.2.1.1

NAAMM

National Association of Architectural Metal Manufacturers
800 Roosevelt Road, Bldg. C, Suite 312
Glen Ellyn, IL 60137

Standard reference number	Title	Referenced in code section number
FP 1001—97	Guide Specifications for Design of Metal Flag Poles	1609.1.1

NCMA

National Concrete Masonry Association
13750 Sunrise Valley
Herndon, VA 22071-4662

Standard reference number	Title	Referenced in code section number
TEK 5-84 (1996)	Details for Concrete Masonry Fire Walls	Table 720.1(2)

NFPA

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471

Standard reference number	Title	Referenced in code section number
10—07	Portable Fire Extinguishers	906.2, 906.3.2, 906.3.4, Table 906.3(1), Table 906.3(2)
11—05	Low Expansion Foam	904.7
12—05	Carbon Dioxide Extinguishing Systems	904.8, 904.11
12A—04 Halon 1301	Halon 1301 Fire Extinguishing Systems.	904.9
13—*10*	Installation of Sprinkler Systems, *as amended**	708.2, 903.3.1.1, 903.3.2, 903.3.5.1.1, 903.3.5.2, 904.11, 905.3.4, 907.6.3, 1613.6.3

NFPA 13, Amended Sections as follows:
Add a new definition as 3.4.1.1 to read as follows:

3.4.1.1 Premixed Antifreeze Solution. A mixture of an antifreeze material with water that is prepared by the manufacturer with a quality control procedure in place that ensures that the antifreeze solution remains homogeneous.

Revise 7.6.1.5 to read as follows:

7.6.1.5 A placard shall be placed on the antifreeze system main valve that indicates the manufacture type and brand of the antifreeze solution, the concentration by volume of the antifreeze solution used, and the volume of the antifreeze solution used in the system.

Revise 7.6.2.1 to read as follows:

7.6.2.1* Antifreeze solutions shall be limited to premixed antifreeze solutions of glycerin (chemically pure or United States Pharmacopoeia 96.5 percent) at a maximum concentration of 50 percent by volume, or propylene glycol at a maximum concentration of 40 percent by volume.

Add a new 7.6.2.1.1 to read:

7.6.2.1.1 Premixed antifreeze solutions of propylene glycol exceeding 40 percent concentration by volume shall be permitted for use with ESFR sprinklers where the ESFR sprinklers are listed for such use in a specific application.

Add new 7.6.2.1.2 to read as follows:

7.6.2.1.2 Premixed antifreeze solutions other than those described in 7.6.2.1 that are listed for use in sprinkler systems shall be permitted to be used.

Add a new 7.6.2.1.3 to read as follows:

7.6.2.1.3 All premixed antifreeze solutions shall be provided with a certificate from the manufacturer indicating the type of antifreeze, concentration by volume, and freezing point.

Delete current Table 7.6.2.2 and replace it with the following table in the annex renumbered as Table A.7.6.2.1

A.7.6.2.1 See Table A.7.6.2.1.

TABLE A.7.6.2.1 PROPERTIES OF GLYCERIN AND PROPYLENE GLYCOL

MATERIAL	SOLUTION (by volume)	SPECIFIC GRAVITY AT 77°F (25°C)	FREEZING POINT	
			°F	°C
Glycerin (C.P. or U.S.P. grade)	0%	1.000	32	0
	5	1.014	31	-0.5
	10	1.029	28	-2.2
	15	1.043	25	-3.9
	20	1.059	20	-6.7
	25	1.071	16	-8.9
	30	1.087	10	-12
	35	1.100	4	-15.5
	40	1.114	-2	-19
	45	1.130	-11	-24
	50%	1.141	-19	-28
Propylene glycol	0%	1.000	32	0
	5	1.004	26	-3
	10	1.008	25	-4
	15	1.012	22	-6
	20	1.016	19	-7
	25	1.020	15	-10
	30	1.024	11	-12
	35	1.028	2	-17
	40%	1.032	-6	-21

C.P.: Chemically Pure; U.S.P.: United States Pharmacopoeia 96.5%.

NFPA—continued

Delete 7.6.2.3 and Table 7.6.2.3.

Revise 7.6.2.4 to read as follows:

7.6.2.4 A premix antifreeze solution with a freezing point below the expected minimum temperature for the locality shall be provided.

Delete existing 7.6.2.5 as well as the Figures 7.6.2.5(a), 7.6.2.5(b), and 7.6.2.5(c) and Annex A.7.6.2.5.

Delete 7.6.2.6.

Add an asterisk to Section 7.6 and a new Annex A.7.6 to read as follows:

A.7.6 In cold climates and areas where the potential for freezing of pipes is a concern, options other than antifreeze are available. Such options include installing the pipe in warm spaces, tenting insulation over the piping (as illustrated in NFPA 13D), listed heat tracing, and the use of dry pipe systems and preaction systems.

In A.7.6.2, delete the second paragraph.

A.7.6.2 Listed CPVC sprinkler pipe and fittings should be protected from freezing with glycerine only. The use of diethylene, ethylene, or propylene glycols is specifically prohibited. Laboratory testing shows that glycol-based antifreeze solutions present a chemical environment detrimental to CPVC.

Delete existing A.7.6.2.4 and Figure A.7.6.2.4.

Revise Section 2.2 and add publications as follows:
2.2 NFPA Publications.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 2006 California* edition.

Revise Section 8.15.1.2.15 as follows:

8.15.1.2.15 Exterior columns under 10 ft^2 (0.93 m^2) in *total* area, formed by studs or wood joist, *with no sources of ignition within the column,* supporting exterior canopies that are fully protected with a sprinkler system, shall not require sprinkler protection.

8.15.5.7 *The sprinkler required at the top and bottom of the elevator hoistway by 8.15.5.6 shall not be required where permitted by Chapter 30 of the California Building Code.*

Revise Section 8.15.7.1* as follows:

8.15.7.1* Unless the requirements of 8.15.7.2 or 8.15.7.3 are met, sprinklers shall be installed under exterior roofs, canopies, porte- cochere, balconies, decks, or similar projections exceeding 4 ft (1.2 m) in width.

Revise Section 8.15.7.2* as follows:

8.15.7.2* Sprinklers shall be permitted to be omitted where the canopies, roofs, balconies, decks, or similar projections are constructed with materials that are noncombustible, limited-combustible, or fire retardant treated wood as defined in NFPA 703, *Standard for Fire Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials.*

Delete Section A.8.15.7.2 of Annex

Revise Section 8.15.7.3

8.15.7.3 Sprinklers shall be permitted to be omitted from below the canopies, roofs, balconies, decks, or similar projections are combustible construction, provided the exposed finish material on the roof, *or* canopy, is noncombustible, limited-combustible, or fire retardant treated wood as defined in NFPA 703, *Standard for Fire Retardant-Treated Wood and Fire-Retardant Coatings for Building Materials,* and the roofs, *or* canopies contain only sprinklered concealed spaces or any of the following unsprinklered combustible concealed spaces:

(1) Combustible concealed spaces filled entirely with noncombustible insulation

(2) Light or ordinary hazard occupancies where noncombustible or limited-combustible ceilings are directly attached to the bottom of solid wood joists so as to create enclosed joist spaces 160 ft^3 (4.5 m^3) or less in volume, including space below insulation that is laid directly on top or within the ceiling joists in an otherwise sprinklered attic *[See 11.2.3.1.4(4)(d)].*

(3) Concealed spaces over isolated small roofs, *or* canopies not exceeding 55 ft^2 (5.1 m^2)

Delete language to section 8.15.7.4 and reserve section number.

8.15.7.4

Revise Annex Section A.8.15.7.5 as follows:

A.8.15.7.5 The presence of planters, newspaper machines and *similar items* should not be considered storage.

Add new Sections 8.16.1.1.1.4 and 8.16.1.1.1.5 as follows:

8.16.1.1.1.4 *Where a system includes floor control valves, a hydraulic design information sign containing information for the floor shall be provided at each floor control valve. A hydraulic design information sign shall be provided for each area calculated. The installing contractor shall identify a hydraulically designed sprinkler system with a permanently marked weatherproof metal or rigid plastic sign secured with corrosion resistant wire, chain or other approved means. Such signs shall be placed at the alarm valve, dry pipe valve, preaction valve or deluge valve supplying the corresponding hydraulically designed area.*

8.16.1.1.1.5 *Control valves, check valves, drain valves and antifreeze valves shall be readily accessible for inspection, testing and maintenance. Valves located more than 7 feet above the finished floor shall be provided with a means of opening and closing the valve from the floor level.*

NFPA—continued

Revise Section 8.16.1.5.1 as follows:

8.16.1.5.1 *Private* fire service main systems shall have sectional control valves at appropriate points in order to permit sectionalizing the system in the event of a break or for the making of repairs or extensions.

Add new Sections 8.16.1.5.1.1, 8.16.1.5.1.2 and 8.16.1.5.1.3 as follows:

8.16.1.5.1.1 *Sectional control valves are not required when the fire service main system serves less than six fire appurtenances.*

8.16.1.5.1.2 *Sectional control valves shall be indicating valves in accordance with Section 6.7.1.3.*

8.16.1.5.1.3 *Sectional control valves shall be located so that no more than five fire appurtenances are affected by shut-down of any single portion of the fire service main. Each fire hydrant, fire sprinkler system riser and standpipe riser shall be considered a separate fire appurtenance. In-rack sprinkler systems shall not be considered as a separate appurtenance.*

8.16.1.5.1.4 *The number of fire appurtenances between sectional control valves is allowed to be modified by the authority having jurisdiction.*

Revise Section 8.16.1.5.2 as follows:

8.16.1.5.2 A valve shall be provided on each bank where a main crosses *a body of* water *or* outside the building foundation(s) where the main or section of main runs under a building.

Add new Section 9.1.3.9.1.1 as follows:

9.1.3.9.1.1 *Powder-driven studs used for attaching hangers to the building structure are prohibited in Seismic Design Categories C, D, E and F.*

Revise Section 9.3.5.8.3 as follows:

9.3.5.8.3 *Where threaded pipe is used for sway bracing, it shall have a wall thickness of not less than Schedule 40.*

Replace Section 9.3.5.9.4 as follows:

Lag screws or power-driven fasteners shall not be used to attach braces to the building structure.

Add language to the beginning of Section 9.3.5.9.6 as follows:

9.3.5.9.6 *Fastening methods other than those identified in Section 9.3.5.9* shall not apply to other fastening methods, which shall be acceptable for use if certified by a registered professional engineer to support the loads determined in accordance with the criteria in 9.3.5.6. Calculations shall be submitted *to* the authority having jurisdiction.

Revise Section 9.3.5.9.7.2* as follows:

9.3.5.9.7.2* Concrete anchors other than those shown in Figure 9.3.5.9.1 *and identified in Section 9.3.5.8.10* shall be acceptable for use where designed in accordance with the requirements of the building code and certified by a registered professional engineer.

Revise Section 9.3.6.1(3) as follows:

9.3.6.1*(3) *No. 12, 440 lb (200Kg) wire installed at least 45 degrees from the vertical plane and anchored on both sides of the pipe. Powder-driven fasteners for attaching restraint is allowed to be used provided that the restraint component does not support the dead load.*

Revise Section 10.6.5 as follows:

10.6.5 Pipe joints shall not be located under foundation footings. *The pipe under the building or building foundation shall not contain mechanical joints.*

Exceptions:

1. Where allowed in accordance with Section 10.6.2

2. Alternate designs may be utilized where designed by a registered professional engineer and approved by the enforcing agency.

Revise Section 11.2.3.1.4(4)(i) as follows:

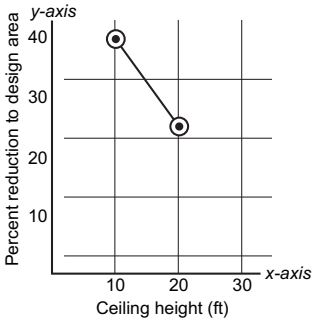
11.2.3.1.4(4)(i) Exterior columns under 10 ft^2 (0.93 m^2) in *total* area, formed by studs or wood joist, *with no sources of ignition within the column,* supporting exterior canopies that are fully protected with a sprinkler system.

Revise Section 11.2.3.2.3.1 as follows:

11.2.3.2.3.1 Where listed quick-response sprinklers, *excluding* extended coverage quick-response sprinklers, are used throughout a system or portion of a system having the same hydraulic design basis, the system area of operation shall be permitted to be reduced without revising the density as indicated in Figure 11.2.3.2.3.1 when all of the following conditions are satisfied:

(1) Wet pipe system
(2) Light hazard occupancy

NFPA—continued



(3) 20 ft (6.1 m) maximum ceiling height

(4) There are no unprotected ceiling pockets as allowed by 8.6.7 and 8.8.7 exceeding 32 ft^2 (3 m^2)

Note: $y = \frac{-3x}{2} + 55$

For ceiling height ≥ 10 ft and ≤ 20 ft, $y = \frac{-3x}{2} + 55$

For ceiling height < 10 ft, $y = 40$

For ceiling height > 20 ft, $y = 0$

For SI units, 1 ft = 0.31 m.

FIGURE 11.2.3.2.3.1 Design Area Reduction for Quick-Response Sprinklers.

Revise Section 11.2.3.2.3.2 as follows:

11.2.3.2.3.2 The number of sprinklers in the design area shall never be less than *seven*.

12.1.1.2 Early suppression fast-response (ESFR) sprinklers shall not be used in buildings with automatic heat or smoke vents unless the vents use a standard-response operating mechanism *with a minimum temperature rating of 360ºF (182ºC) or 100ºF (56ºC) above the operating temperature of the sprinklers, whichever is higher*.

Add Section 24.1(5)

24.1 Approval of Sprinkler Systems and Private Fire Service Mains.

The installing contractor shall do the following:

(1) Notify the authority having jurisdiction and the property owner or property owner's authorized representative of the time and date testing will be performed.

(2) Perform all required testing *(see Section 24.2)*

(3) Complete and sign the appropriate contractor's material and test certificate(s) *(see Figure 24.1)*

(4) Remove all caps and straps prior to placing the sprinkler system in service

(5) Upon system acceptance by the authority having jurisdiction a label prescribed by Title 19 California Code of Regulations, Chapter 5 shall be affixed to each system riser.

Revise Section 24.4(2) and add Section 24.4(3) as follows:
24.4 Instructions.

The installing contractor shall provide the property owner or the property owner's authorized representative with the following:

(1) All literature and instructions provided by the manufacturer describing proper operation and maintenance of any equipment and devices installed

(2) *NFPA 25, Standard for the Inspection, testing, and maintenance of Water-Based Fire Protection Systems, 2006 California Edition*

(3) Title 19, California Code of Regulations, Chapter 5, "Fire Extinguishing Systems."

Add sentence at the end of Section 24.5.1 as follows:

24.5.1 *"Pipe schedule systems shall be provided with a sign indicating that the system was designed and installed as a pipe schedule system and the hazard classification(s) included in the design."*

Revise Section 24.5.2(3) and add Sections 24.5.2(7) to (14) as follows:

24.5.2 The sign shall include the following information:

(3) Required flow and pressure of the system at the base of the riser

(7) Required flow and pressure of the system at the water supply source.

(8) Required flow and pressure of the system at the discharge side of the fire pump where a fire pump is installed.

NFPA—continued

(9) Type or types and number of sprinklers or nozzles installed including the orifice size, temperature rating, orientation, K-Factor, sprinkler identification number (SIN) for sprinkler heads when applicable, and response type.

(10) The minimum discharge flow rate and pressure required from the hydraulically most demanding sprinkler.

(11) The required pressure settings for pressure reducing valves.

(12) For deluge sprinkler systems, the required flow and pressure at the hydraulically most demanding sprinkler or nozzle.

(13) The protection area per sprinkler based on the hydraulic calculations.

(14) The edition of NFPA 13 to which the system was designed and installed.

Revise Section 24.6.1 as follows:

24.6.1 *California Edition* NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems.*

13D—*10* Standard for the Installation of Sprinkler Systems in One- and Two-Family Dwellings and Manufactured Homes *as amended** *R313.1.1, R313.2.1, R313.3.1, R313.3.2, R313.3.2.3.1, R313.3.2.4.2, R313.3.6*

NFPA 13D, Amended Sections as follows:
Add a new definition as 3.3.9.1.1 and related annex note to read as follows:

3.3.9.1.1* Premixed Antifreeze Solution. A mixture of an antifreeze material with water that is prepared and factory-mixed by the manufacturer with a quality control procedure in place that ensures that the antifreeze solution remains homogeneous.

A.3.3.9.1.1 Where a tank is used as the water supply for the sprinkler system, the tank is not permitted to be filled with antifreeze.

Revise 4.1.4 and related annex note to read as follows:

4.1.4* Antifreeze Systems.

A.4.1.4 Sampling from the top and bottom of the system helps to determine if the solution has settled. Antifreeze solutions are heavier than water. If the antifreeze compound is separating from the water due to poor mixing, it will exhibit a higher concentration in the lower portion of the system than in the upper portions of the system. If the concentration is acceptable near the top, but too low near the water connection, it may mean that the system is becoming diluted near the water supply. If the concentration is either too high or too low in both the samples, it may mean that the wrong concentration was added to the system.

On an annual basis, test samples should be drawn from test valve B as shown in Figure 8.3.3.2.1(1), especially if the water portion of the system has been drained for maintenance or repairs. A small hydrometer can be used so that a small sample is sufficient. Where water appears at valve B, or where the sample indicates that the solution has become weakened, the entire system should be emptied and refilled with acceptable solution as previously described.

Where systems are drained in order to be refilled, it is not typically necessary to drain drops that are less than 36 inches in length. Most systems with drops have insufficient volume to cause a problem, even if slightly higher concentration solutions collect in the drops. For long drops with significant volume, consideration should be given to draining drops if there is evidence that unacceptably high concentrations of antifreeze have collected in these long drops.

When emptying and refilling antifreeze solutions, every attempt should be made to recycle the old solution with the antifreeze manufacturer rather than discarding it.

4.1.4.1 Annual Antifreeze Solution Test and Replacement Procedure.

4.1.4.1.1 Samples of antifreeze solution should be collected by qualified individuals in accordance with 4.1.4.1.1.1 or 4.1.4.1.1.2 on an annual basis.

4.1.4.1.1.1 The system shall be drained to verify that (a) the solution is in compliance with 8.3.3, and (b) the solution provides the necessary freeze protection. Solution samples shall be taken near the beginning and near the end of the draining process.

4.1.4.1.1.2* Solution samples shall be taken at the highest practical elevation and the lowest practical elevation of the system.

A.4.1.4.1.1.2 If not already present, test connections (valves) for collection of solution samples should be installed at the highest and lowest practical locations of the system or portion of the system containing antifreeze solution.

4.1.4.1.2 The two samples collected in accordance with the procedures specified in 4.1.4.1.1.1 or 4.1.4.1.1.2 shall be tested to verify that the specific gravity of both samples is similar and that the solution is in compliance with 8.3.3. The specific gravity of each solution shall be checked using a hydrometer with a suitable scale or a refractometer having a scale calibrated for the antifreeze solution.

4.1.4.1.3* If concentrations of the two samples collected in accordance with the procedures above are similar and in compliance with 8.3.3, then (a) the solution drained in accordance with 4.1.4.1.1.1 can be used to refill the system, or (b) the existing undrained solution tested in accordance with 4.1.4.1.1.2 shall be permitted to continue to be used. If the two samples are not similar and not in compliance with 8.3.3, then a solution in compliance with 8.3.3 shall be used to refill the system.

A.4.1.4.1.3 In the past, for some existing systems subject to extremely low temperatures, antifreeze solutions with concentrations greater than what is now permitted by NFPA 13D were used. Such high concentrations of antifreeze are no longer permitted. In situations where extremely low temperatures are anticipated, refilling the fire sprinkler system with a concentration of antifreeze solution currently permitted by the standard might not provide sufficient freeze protection without additional measures. Such measures might include converting the antifreeze system to another type of sprinkler system.

NFPA—continued

4.1.4.1.4 A tag shall be attached to the riser indicating the date the antifreeze solution was tested. The tag shall also indicate the type and concentration of antifreeze solution (by volume) with which the system is filled, the date the antifreeze was replaced (if applicable), the name of the contractor that tested and/or replaced the antifreeze solution, the contractor's license number, a statement indicating if the entire system was drained and replaced with antifreeze, and a warning to test the concentration of the antifreeze solutions at yearly intervals per NFPA 13D.

6.2* Water Supply Sources. *When the requirements of Section 6.2.2 are met,* the following water supply sources shall be considered to be acceptable by this standard:

(1) A connection to a reliable waterworks system with or without an automatically operated pump

(2) An elevated tank

(3) A pressure tank designed to American Society of Mechanical Engineers (ASME) standards for a pressure vessel with a reliable pressure source

(4) A stored water source with an automatically operated pump

(5) A well with a pump of sufficient capacity and pressure to meet the sprinkler system demand. The stored water requirement of 6.1.2 or 6.1.3 shall be permitted to be a combination of the water in the well (including the refill rate) plus the water in the holding tank if such tank can supply the sprinkler system.

6.2.2 Where a *well*, pump, tank *or combination thereof* is the source of supply for a fire sprinkler system, *the water supply shall serve both domestic and fire sprinkler systems, and* the following shall be met:

(1) A test connection shall be provided downstream of the pump that creates a flow of water equal to the smallest sprinkler on the system. The connection shall return water to the tank.

(2) Any disconnecting means for the pump shall be approved.

(3) A method for refilling the tank shall be piped to the tank.

(4) A method of seeing the water level in the tank shall be provided without having to open the tank.

(5) The pump shall not be permitted to sit directly on the floor.

***6.2.2.1** Where a fire sprinkler system is supplied by a stored water source with an automatically operated means of pressurizing the system other than an electric pump, the water supply may serve the sprinkler system only.*

***6.2.4** Where a water supply serves both domestic and fire sprinkler systems, 5 gpm (19 L/min) shall be added to the sprinkler system demand at the point where the systems are connected, to determine the size of common piping and the size of the total water supply requirements where no provision is made to prevent flow into the domestic water system upon operation of a sprinkler.*

Add an asterisk to 8.3.3 and add a new A.8.3.3 to read as follows:

8.3.3* Antifreeze Systems.

A.8.3.3 Where protection of pipes from freezing is a concern, options other than antifreeze are available. Such alternatives include running the piping in warm spaces, tenting insulation over pipe, dry-pipe systems, and preaction systems.

Revise 8.3.3.2.1 to read as follows:

8.3.3.2.1* Unless permitted by 8.3.3.2.1.1, antifreeze solutions shall be limited to premixed antifreeze solutions of glycerine (chemically pure or United States Pharmacopoeia 96.5 percent) at a maximum concentration of 50 percent by volume, propylene glycol at a maximum concentration of 40 percent by volume, or other solutions listed specifically for use in fire protection systems.

Add a new 8.3.3.2.1.1 to read as follows:

8.3.3.2.1.1 For existing systems, antifreeze solutions shall be limited to premixed antifreeze solutions of glycerine (chemically pure or United States Pharmacopoeia 96.5 percent) at a maximum concentration of 50 percent by volume, propylene glycol at a maximum concentration of 40 percent by volume, or other solutions listed specifically for use in fire protection systems.

Delete 8.3.3.2.2 and 8.3.3.2.3 and related Annex material A.8.3.3.2.3.

TABLE A.8.3.3.2.1 PROPERTIES OF GLYCERINE AND PROPYLENE GLYCOL

MATERIAL	SOLUTION (by volume)	SPECIFIC GRAVITY AT 60°F (15.6°C)	FREEZING POINT	
			°F	°C
Glycerine (C.P. or U.S.P. grade)	50% water	1.145	-20.9	-29.4
Hydrometer scale 1.000 to 1.200				
Propylene glycol	60% water	1.034	-6	-21.1
Hydrometer scale 1.000 to 1.200 (subdivisions 0.002)				

C.P.: Chemically Pure; U.S.P.: United States Pharmacopoeia 96.5%.

Move Table 8.3.3.2.3 to the annex and renumber as Table A.8.3.3.2.1 while deleting the rows in the table dealing with glycerine and 40 percent water, glycerine and 30 percent water, propylene glycol and 50 percent water and propylene glycol and 40 percent water. Add an annex note so that the annex and Table would appear as follows:

A.8.3.3.2.1 See Table A.8.3.3.2.1.

Renumber 8.3.3.2.3.1 to 8.3.3.2.2.

8.3.3.2.2 The concentration of antifreeze solutions shall be limited to the minimum necessary for the anticipated minimum temperature.

Delete 8.3.3.2.4, 8.3.3.2.5 and Table 8.3.3.2.5.

Renumber 8.3.3.2.6 as 8.3.3.2.3 and renumber A.8.3.3.2.6 as A.8.3.3.2.3. Also renumber Figure A.8.3.3.2.6 as Figure A.8.3.3.2.3.

8.3.3.2.3* An antifreeze solution with a freezing point below the expected minimum temperature for the locality shall be installed.

A.8.3.3.2.3 Beyond certain limits, an increased proportion of antifreeze does not lower the freezing point of the solution (*see Figure A.8.3.3.2.3*). Glycerine, diethylene glycol, ethylene glycol, and propylene glycol never should be used without mixing with water in the proper proportions, because these materials tend to thicken near 32°F (0°C).

Renumber 8.3.3.2.7 as 8.3.3.2.4 and revise to read as follows:

8.3.3.2.4 The specific gravity of the antifreeze shall be checked by a hydrometer with a scale having 0.002 subdivisions in accordance with Figure 8.3.3.2.4(a) and 8.3.3.2.4(b).

Renumber Figure 8.3.3.2.3(a) as Figure 8.3.3.2.4(a) and delete the 50 percent curve.

Renumber Figure 8.3.3.2.3(b) as Figure 8.3.3.2.4(b) and delete the 60 percent and 70 percent curves.

8.6.4* Sprinklers shall not be required in *detached* garages, open attached porches, carports *with no habitable space above,* and similar structures.

13R—*10* Installation of Sprinkler Systems in Residential Occupancies Up to and Including Four Stories in Height *as amended** 903.3.1.2, 903.3.5.1.1, 903.3.5.1.2, 903.4

****NFPA 13R, Amended Sections as follows:***

Revise Section 2.2 and add publications as follows:
2.2 NFPA Publications.

NFPA 25, *Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems, 2006 California* edition.

Add Section 6.3.5 as follows:
6.3.5 Instructions.

The installing contractor shall provide the property owner or the property owner's authorized representative with the following:

(1) All literature and instructions provided by the manufacturer describing proper operation and maintenance of any equipment and devices installed

(2) NFPA 25, Standard for the Inspection, Testing, and Maintenance of Water-Based Fire Protection Systems 2006 California Edition and Title 19, California Code of Regulations, Chapter 5.

(3) Once the system is accepted by the authority having jurisdiction a label as prescribed by Title 19, California Code of Regulations, Chapter 5, shall be affixed to each system riser.

14—07 Installation of Standpipe and Hose System, *as amended**. 905.2, 905.3.4, 905.4.2, 905.6.2, 905.8

NFPA 14, Amended Sections as follows:

Replace Section 6.3.7.1

6.3.7.1 *System water supply valves, isolation control valves, and other valves in fire mains shall be supervised in an approved manner in the open position by one of the following methods:*

(1) Where a building has a fire alarm system or a sprinkler monitoring system installed, the valve shall be supervised by:

(a) a central station, proprietary, or remote supervising station, or

(b) a local signaling service that initiates an audible signal at a constantly attended location.

(2) Where a building does not have a fire alarm system or a sprinkler monitoring system installed, the valve shall be supervised by:

(a) Locking the valves in the open position, or

(b) Sealing of valves and a approved weekly recorded inspection where valves are located within fenced enclosures under the control of the owner.

15—01 *Water Spray Fixed Systems for Fire Protection*

16—07 Installation of Foam-water Sprinkler and Foam-water Spray Systems 904.7, 904.11

NFPA—continued

17—02	Dry Chemical Extinguishing Systems 904.6, 904.11
17A—02	Wet Chemical Extinguishing Systems 904.5, 904.11
20—07	Installation of Stationary Pumps for Fire Protection 913.1, 913.2.1, 913.5
22—03	*Water Tanks for Private Fire Protection*
24—10	*Installation of Private Fire Service Mains and Their Appurtenances, as amended** . . . . .

NFPA 24, Amended Sections as follows:

Amend Section 4.2.1

Section 4.2.1. Installation work shall be done by fully experienced and responsible *contractors. Contractors shall be appropriately licensed in the State of California to install private fire service mains and their appurtenances.*

Revise Section 4.2.2 as follows:

4.2.2 *Installation or modification of private fire service mains shall not begin until plans are approved and appropriate permits secured from* the authority having jurisdiction.

Add Section 4.2.2.1 as follows:

4.2.2.1 *As approved by the authority having jurisdiction, emergency repair of existing system may start immediately, with plans being submitted to the authority having jurisdiction within 96 hours from the start of the repair work.*

Revise Section 5.9.1.2 as follows:

Section 5.9.1.2 Fire department connections shall be properly supported *and protected from mechanical damage.*

Revise Section 5.9.5.1 as follows:

5.9.5.1 Fire department connections shall be on the street side of buildings and *as approved by the authority having jurisdiction.*

Revise Section 6..5.1 as follows:

6.5.1 *Private* fire service main systems shall have sectional control valves at appropriate points in order to permit sectionalizing the system in the event of a break or for the making of repairs or extensions.

Add Sections 6.5.2.1 – 6.5.2.3

6.5.2.1 *Sectional control valves are not required when the fire service main system serves less than six fire appurtenances.*

6.5.2.2 *Sectional control valves shall be indicating valves in accordance with Section 6.7.1.3.*

6.5.2.3 *Sectional control valves shall be located so that no more than five fire appurtenances are affected by shut-down of any single portion of the fire service main. Each fire hydrant, fire sprinkler system riser, and standpipe riser shall be considered a separate fire appurtenance. In-rack sprinkler systems shall not be considered as a separate appurtenance.*

6.5.2.4 *The number of fire appurtenances between sectional control valves is allowed to be modified by the authority having jurisdiction.*

Revise Section 6.6.2 as follows:

6.6.2 A sectional valve shall be provided at the following locations:

(1) On each bank where a main crosses *a body of* water

(2) Outside the building foundation(s) where a main or a section of a main runs under a building

Revise Section 10.6.5 as follows:

10.6.5 Pipe joints shall not be located under foundation footings. *The pipe under the building or building foundation shall not contain mechanical joints.*

Exceptions:

1. Where allowed in accordance with Section 10.6.2

2. Alternate designs may be utilized where designed by a registered professional engineer and approved by the enforcing agency.

Revise Section 10.9.1 as follows:

10.9.1 *Backfill shall be well tamped in layers or puddle under and around pipes to prevent settlement or lateral movement.* Backfill shall consist of clean fill sand or pea gravel to a minimum 6" below and to a minimum of 12" above the pipe *and shall contain no ashes, cinders, refuse, organic matter, or other corrosive materials. Other backfill materials and methods are permitted where designed by a registered professional engineer and approved by the enforcing agency.*

30—08	Flammable and Combustible Liquids Code 415.3
31—06	Installation of Oil-burning Equipment 2113.15
32—07	Dry Cleaning Plants 415.6.4
37—06	*Installation and Use of Stationary Combustion Engines and Gas Turbines*

NFPA—continued

40—07	Storage and Handling of Cellulose Nitrate Film	409.1
52—06	*Compressed Natural Gas (CNG) Vehicular Fuel Systems Code*	
54—09	*National Fuel Gas Code*	
58—08	Liquefied Petroleum Gas Code	415.6.3
61—08	Prevention of Fires and Dust Explosions in Agricultural and Food Product Facilities	415.6.1
70—08	National Electrical Code	108.3, 415.8.2.8.2, 904.3.1, 907.6.1, 909.12.1, 909.16.3, 1205.4.1, 2701.1, 3401.3, H106.1, H106.2, K101, K111.1
72—*10*	National Fire Alarm Code, *as amended**	901.6, 903.4.1, 904.3.5, 907.2, 907.2.5, 907.2.11, 907.2.13.2, 907.3, 907.3.3, 907.3.4, 907.5.2.1.2, 907.5.2.2, 907.6, 907.6.1, 907.6.5, 907.7, 907.7.1, 907.7.2, 911.1.5, 3006.5, 3007.6

NFPA 72, Amended Sections as follows:

10.3.1 Equipment constructed and installed in conformity with this code shall be listed for the purpose for which it is used. *Fire alarm systems and components shall be California State Fire Marshal approved and listed in accordance with California Code of Regulations, Title 19, Division 1.*

10.3.3 All devices and appliances that receive their power from the initiating device circuit or signaling line circuit of a control unit shall be *California State Fire Marshal* listed for use with the control unit.

10.6.1 *Where approved by the authority having jurisdiction,* ECS priority signals when evaluated by stakeholders through risk analysis in accordance with 24.4.2.2 shall be permitted to take precedence over all other signals.

14.4.7.1 Testing. Household fire alarm systems shall be tested *in accordance with the manufacturer's published instructions* according to the methods of Table 14.4.2.2.

17.15 Fire Extinguisher Monitoring Device. A fire extinguisher monitoring device shall indicate those conditions for a specific fire extinguisher required by *California Code of Regulations, Title 19, Division 1, Chapter 1, Section 574.2(c) and California Fire Code to a fire alarm control unit.*

21.3.6 Smoke detectors shall not be installed in unsprinklered elevator hoistways unless they are installed to activate the elevator hoistway smoke relief equipment *or where required by Chapter 30 of the California Building Code.*

23.4.2.2 (4) Where the vertically run conductors are contained in a 2-hour rated cable assembly, or enclosed (installed) in a 2-hour rated enclosure or a listed circuit integrity (C.I.) cable, which meets or exceeds a 2-hour fire resistive rating.

23.8.5.1.2 Where connected to a supervising station, fire alarm systems employing automatic fire detectors or waterflow detection devices shall include a manual fire alarm box to initiate a signal to the supervising station.

Exception: Fire alarm systems dedicated to elevator recall control, supervisory service *and fire sprinkler monitoring.*

23.8.5.4.1 Systems equipped with alarm verification features shall be permitted under the following conditions:

(1) The alarm verification feature is not initially enabled unless conditions or occupant activities that are expected to cause nuisance alarms are anticipated in the area that is protected by the smoke detectors. Enabling of the alarm verification feature shall be protected by password or limited access.

(2) A smoke detector that is continuously subjected to a smoke concentration above alarm threshold does not delay the system functions of Sections 10.6 through 10.13, 23.8.1.1, or 21.2.1 by more than *30 seconds.*

(3) Actuation of an alarm-initiating device other than a smoke detector causes the system functions of 4.4.3, 6.8.1.1, or 6.16.2.1 without additional delay.

(4) The current status of the alarm verification feature is shown on the record of completion *(see Figure 4.5.2.1, item 10).*

(5) Operation of a patient room smoke detector in I-2 and R-2.1 Occupancies shall not include an alarm verification feature.

29.3.1 All devices, combinations of devices, and equipment to be installed in conformity with this chapter shall be approved or listed *by the California State Fire Marshal* the for the purposes for which they are intended.

29.5.2.1.1* Smoke and Heat Alarms. Unless exempted by applicable laws, codes, or standards, smoke or heat alarms used to provide a fire-warning function, and when two or more alarms are installed within a dwelling unit, suite of rooms, or similar area, shall be arranged so that the operation of any smoke or heat alarm causes all alarms within these locations to sound.

29.7.2.1 *The alarm verification feature shall not be used for household fire warning equipment.*

29.7.5.7.1 *The alarm verification feature shall not be used for household fire warning equipment.*

80—07	Fire Doors and Other Opening Protectives	410.3.5, 508.2.5.2, 715.4, 715.4.5, 715.4.6, 715.4.7.1, 715.4.8.2, 715.5, 715.5.5, 1008.1.4.3
85—07	Boiler and Combustion System Hazards Code (Note: NFPA 8503 has been incorporated into NFPA 85)	415.6.1
92A—09	*Standard for Smoke-Control Systems Utilizing Barriers and Pressure Differences*	
92B—05	Smoke Management Systems in Malls, Atria and Large Spaces	909.8
99—05	Standard for Health Care Facilities	407.9
101—06	Life Safety Code	1028.6.2
105—07	Standard for the Installation of Smoke Door Assemblies	405.4.2, 715.4.3.1, 909.20.4.1
110—05	Emergency and Standby Power Systems	2702.1

NFPA—continued

111—05	Stored Electrical Energy Emergency and Standby Power Systems	2702.1
120—04	Coal Preparation Plants	415.6.1
170—06	*Standard for Fire Safety and Emergency Symbols*	*907.1.2*
211—06	Chimneys, Fireplaces, Vents and Solid Fuel-burning Appliances	2112.5
252—03	Standard Methods of Fire Tests of Door Assemblies	715.3, 715.4.1, 715.4.2, 715.4.3, 715.4.7.3.1
253—06	Test for Critical Radiant Flux of Floor Covering Systems Using a Radiant Heat Energy Source	402.12.1, 406.6.4, 804.2, 804.3
257—07	Standard for Fire Test for Window and Glass Block Assemblies	715.3, 715.4.3.2, 715.5, 715.5.1, 715.5.2, 715.5.9.1
259—03	Test Method for Potential Heat of Building Materials	2603.4.1.10, 2603.5.3
265—07	Method of Fire Tests for Evaluating Room Fire Growth Contribution of Textile Wall Coverings on Full Height Panels and Walls	803.1.3, 803.1.3.1
268—07	Standard Test Method for Determining Ignitibility of Exterior Wall Assemblies Using a Radiant Heat Energy Source	1406.2.1, 1406.2.1.1, 1406.2.1.2, 2603.5.7, D105.1
285—06	Standard Method of Test for the Evaluation of Flammability Characteristics of Exterior Nonload-bearingWall Assemblies Containing Combustible Components	1407.10.4, 2603.5.5
286—06	Standard Method of Fire Test for Evaluating Contribution of Wall and Ceiling Interior Finish to Room Fire Growth	402.16.4, 803.1.2, 803.1.2.1, 803.9, 2603.4, 2603.9
288—07	Standard Method of Fire Tests of Floor Fire Door Assemblies Installed Horizontally in Fire-resistance-rated Floor Systems	712.8
409—04	Aircraft Hangars	412.4.6, Table 412.4.6, 412.4.6.1, 412.6.5
418—06	Standard for Heliports	412.7.4
484—06	Combustible Metals	415.6.1
654—06	Prevention of Fire & Dust Explosions from the Manufacturing, Processing and Handling of Combustible Particulate Solids	415.6.1
655—07	Prevention of Sulfur Fires and Explosions.	415.6.1
664—07	Prevention of Fires and Explosions in Wood Processing and Woodworking Facilities	415.6.1
701—04	Standard Methods of Fire Tests for Flame-propagation of Textiles and Films	402.12.1, 410.3.6, 801.1.4, 806.1, 806.1.2, 806.2, 3102.3, 3102.3.1, 3102.6.1.1, 3105.4, D102.2.8, H106.1.1
704—07	Standard System for the Identification of the Hazards of Materials for Emergency Response	414.7.2, 415.2
720	*Standard for the Installation of Carbon Monoxide (CO) Detection and Warning Equipment 2009 Edition*	*420.4*
1124—06	Manufacture, Transportation and Storage of Fireworks and Pyrotechnic Articles	415.3.1
2001—08	Clean Agent Fire Extinguishing Systems, *as amended**.	Table 901.6.1, 904.10

NFPA 2001, Amended Sections as follows:

4.3.5.1.1 *Alarms signals from the fire extinguishing system shall not interfere with the building fire alarm signal.*

4.3.5.2.1 *The lens on visual appliances shall be "red" in color.*

Exception: Other lens colors are permitted where approved by the enforcing agency.

HISTORY NOTE APPENDIX

California Building Code
(Title 24, Part 2, California Code of Regulations)

1. For prior code history, see the History Note Appendix to the California Building Code 2007 Triennial Edition, effective January 1, 2008.
2. BSC 02/09, SFM 03/09, OSHPD 05/09 & 07/09, DSA-SS 02/09, HCD 01/09, DWR 01/09, CSLC 01/08 — Adoption of the 2009 edition of the International Building Code published by the International Code Council, for incorporation into the *2010 California Building Code*, CCR Title 24, Part 2 with amendments for State regulated occupancies effective on January 1, 2011.
3. Errata to correct editorial errors in preface and Chapters 1-4, 6-12, 14-19, 21-24, 26, 30, 31, 34 and 35.
4. (SFM EF01/10) Amend Chapter 35, Referenced Standards Table for NFPA 13, 13D and 13R. Approved as an emergency by the California Building Standards Commission on October 19, 2010, Files with the Secretary of state on October 26, 2010.
5. SFM EF 01/10 & EF 01/11 – Emergency regulations for antifreeze in residential fire sprinkler systems and for exceptions for interconnected residential smoke detectors, respectively. Effective on April 28, 2011 and approved as permanent on July 20, 2011.
6. HCD EF 01/11 – Emergency regulations for exceptions for interconnected residential carbon monoxide detectors, effective on July 21, 2011 and approved as permanent on July 20, 2011.
7. BSC 01/10; DPH 01/10; DSA-AC 01/10; HCD 02/10 & 03/10; OSHPD 02/10 & 03/10; SFM 01/10 – Repeal and amend provisions of the 2010 *California Building Code*, CCR Title 24, Part 2 for State regulated occupancies, effective on July 1, 2012.
8. CSA 01/10 – Update minimum standards for the design and construction of local detention facilities of the 2010 *California Building Code*, CCR Title 24, Part 2, effective on July 1, 2012.