

**2022 CALIFORNIA BUILDING CODE  
INCLUDING 2023 CITY OF LOS ANGELES AMENDMENTS  
VOLUME 2**

Effective Date January 1, 2023

By starting with a loose-leaf copy of the 2022 *California Building Code*, Volume 2, and substituting the City of Los Angeles pages (yellow), the user will have a complete 2022 *California Building Code including 2023 City of Los Angeles Amendments*, Volume 2, in correct numerical sequence. It is suggested that the original 2022 *California Building Code*, Volume 2, pages that have been removed and replaced by City of Los Angeles pages be retained in a separate file for possible future reference.

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A large, light gray outline map of the state of California serves as a background for the top half of the cover. The map shows the state's irregular coastline and major inland features.

# 2022 CALIFORNIA BUILDING CODE

**VOLUME 2 OF 2**

INCLUDING 2023 CITY OF LOS ANGELES AMENDMENTS



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(Based on the 2021 IBC®)

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# **CITY OF LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY**

## **Published Codes:**

2022 California Building Code including 2023 City of Los Angeles Amendments, Volumes 1 and 2  
2022 California Residential Code including 2023 City of Los Angeles Amendments  
2022 California Electrical Code including 2023 City of Los Angeles Amendments  
2022 California Plumbing Code including 2023 City of Los Angeles Amendments  
2022 California Mechanical Code including 2023 City of Los Angeles Amendments  
2022 California Green Building Standards Code including 2023 City of Los Angeles Amendments  
2022 California Existing Building Code including 2023 City of Los Angeles Amendments

## **Related Codes and Standards:**

City of Los Angeles Municipal Code  
City of Los Angeles Planning and Zoning Code  
California Building Standards Code, Parts 2–5, 7, 8, 10, and 11



## CITY OF LOS ANGELES DEPARTMENT OF BUILDING AND SAFETY

The mission of the Department of Building and Safety is to protect the lives and safety of the residents and visitors of the City of Los Angeles and enhance the quality of life, housing, economic prosperity, and job creation. Through a timely, cooperative, and transparent process, the Department advises, guides, and assists customers to achieve compliance with the Building, Zoning, Plumbing, Mechanical, Electrical, Disabled Access, Energy, and Green Codes and local State laws to build safe, well, and fast.

The Department of Building and Safety is the largest organization of its kind in the United States with a dedicated staff of more than 1,000 employees. The Department provides service to a population of more than 4 million people in a metropolitan area of more than 470 square miles with its 12 offices located throughout the City.

### **The Responsibilities of the Department of Building and Safety Are Assigned to Five Bureaus:**

**The Permit and Engineering Bureau** is primarily responsible for the plan checking, report approval, and permit issuance related to building projects within privately owned property in the City of Los Angeles. In the course of carrying out these responsibilities, the Engineering Bureau enforces the structural, building, plumbing, mechanical, electrical, disabled access, green, grading and zoning regulations of the City. In addition, the Permit and Engineering Bureau is responsible for reviewing applications for building, plumbing, mechanical and electrical product approvals through its Building Research Section, and Electrical and Mechanical Test Laboratories.

**The Inspection Bureau** is responsible for inspection of all construction activities for new and existing buildings, plumbing, mechanical, electrical, elevator and pressure vessel systems, the enforcement of applicable State and local laws relating to existing buildings and property, and the administration of various special programs mandated by the City Council.

**The Code Enforcement Bureau** was created as a part of a reorganization of code enforcement functions in 1999. This Bureau is responsible for the enforcement of Municipal Code requirements for all existing buildings in the City of Los Angeles, except rental multifamily dwellings. The Bureau handles complaints, citations, processing of vacant and nuisance buildings for repair or demolition, signs, the Vehicle Establishment Inspection Program and the Proactive Code Enforcement Program among others.

**The Resource Management Bureau** is responsible for the direction and coordination of administrative and financial projects, systems development, training, and acts as the emergency disaster coordinator for all Department operations.

**The Technology Service Bureau** is responsible to provide oversight over the Build LA Project, and annually provides IT services for more than 3,000 City Staff (Building and Safety and other departments) and over 30,000 public customers; and manages more than 250 servers and 3,000 computer devices.

### **The Board of Building and Safety Commissioners:**

The Board of Building and Safety Commissioners is a five-member board of citizens residing in the City and appointed by the Mayor and confirmed by the City Council. The Commission has the authority to hear and act upon appeals from determinations, orders, or actions of the Department or the Superintendent of Building, pertaining to enforcement of the codes under the jurisdiction of the Department. In addition, the Commission conducts public hearings, as needed, regarding procedures, new codes and various functions of the Department. Finally, the Commission acts in an advisory capacity to the Department and the Superintendent of Building.

### **The Board of Disabled Access Appeals Commissioners:**

The Board of Disabled Access Appeals Commissioners comprises of five qualified persons appointed by the Mayor and confirmed by the City Council. Two members of the commission shall be physically disabled persons, and two members shall be persons experienced in construction. The fifth member may be any resident of the City of Los Angeles. The Commission has the authority to hear and act upon appeals from determinations, orders, or actions of the Department or the Superintendent of Building, pertaining to enforcement of the disabled access codes under the jurisdiction of the Disabled Access Division of the Department.



## EFFECTIVE USE OF THE CITY OF LOS ANGELES BUILDING CODE

The *City of Los Angeles Building Code* was established in 1889 with the appointment of the first superintendent of building. In 1923, the first of 18 volumes of the *Los Angeles Annual Builder's Guide* was published. This guide is a handbook for architects and builders and contains a complete cross index of the Los Angeles building ordinances, electrical ordinances and supplementary rulings and the California State Housing Act.

After 1936, the building regulations of Chapter IX of the *Los Angeles Municipal Code* (LAMC) were established by the passage of Ordinance No. 77,000. But it was 1943 when Ordinance No. 87,000 amended in its entirety Article 1 of Chapter IX of the *Los Angeles Municipal Code* and a new *Los Angeles City Building Code* was published. This edition of the LAMC established the format of the different divisions and sections relevant to the building regulations in the city.

Through the intervening years, the code has been amended and revised regularly to keep pace with the ever-changing technology of the construction industry and new and proven concepts of structural design.

The State of California has mandated the City of Los Angeles to enforce the *California Building Code* (CBC). The City Council for the City of Los Angeles has passed Ordinance Number 187,719 (operative January 1, 2023) to amend Article 1 of Chapter IX of the *Los Angeles Municipal Code* and to adopt by reference the 2022 edition of the CBC and hereinafter shall be called the 2023 edition of the *City of Los Angeles Building Code*.

Chapter 1 is the general administrative provisions of the City of Los Angeles and replaces Chapter 1 of the CBC.

Chapters 2 through 35 are the general provisions of the CBC.

Chapters 61 through 72 have been added to the code to provide special requirements of the City of Los Angeles.

Chapters 81 through 91 are the city code requirements of existing buildings and structures.

Chapters 92 through 96 are the city standard for voluntary and mandatory earthquake hazard reduction standards for existing buildings.

Chapter 97 is the city standard for energy and water efficiency for existing buildings.

At the end of Volume 2 of the Building Code, "Excerpts" has been added for additional reference to the industry. Excerpts are the accumulation of related Los Angeles City codes and municipal and administrative code sections pertaining to the Department of Building and Safety.

### Marginal Markings

L  
A  
L  
A

These symbols indicate that a City of Los Angeles amendment has been added to the 2022 CBC.

➔ This symbol indicates a deletion of IBC or CBC or City of Los Angeles language by the City of Los Angeles.

# How to Distinguish Between Model Code Language and California Amendments

To distinguish between model code language and the incorporated California amendments, including exclusive California standards, California amendments will appear in *italics*.

**[BSC]** This is an example of a state agency acronym used to identify an adoption or amendment by the agency. The acronyms will appear at California Amendments and in the Matrix Adoption Tables. Sections 1.2 through 1.14 in Chapter 1, Division 1 of this code, explain the used acronyms, the application of state agency adoptions to building occupancies or building features, the enforcement agency as designated by state law (may be the state adopting agency or local building or fire official), the authority in state law for the state agency to make the adoption and the specific state law being implemented by the agency's adoption. The following acronyms are used in Title 24 to identify the state adopting agency making an adoption.

## Legend of Acronyms of Adopting State Agencies

BSC	California Building Standards Commission (see Section 1.2)
BSC-CG	California Building Standards Commission-CALGreen (see Section 1.2.2)
BSCC	Board of State and Community Corrections (see Section 1.3)
SFM	Office of the State Fire Marshal (see Section 1.11)
HCD 1	Department of Housing and Community Development (see Section 1.8.2.1.1)
HCD 2	Department of Housing and Community Development (see Section 1.8.2.1.3)
HCD 1/AC	Department of Housing and Community Development (see Section 1.8.2.1.2)
DSA-AC	Division of the State Architect-Access Compliance (see Section 1.9.1)
DSA-SS	Division of the State Architect-Structural Safety (see Section 1.9.2)
DSA-SS/CC	Division of the State Architect-Structural Safety/Community Colleges (see Section 1.9.2.2)
OSHPD 1	Office of Statewide Health Planning and Development (see Section 1.10.1)
OSHPD 1R	Office of Statewide Health Planning and Development (see Section 1.10.1)
OSHPD 2	Office of Statewide Health Planning and Development (see Section 1.10.2)
OSHPD 3	Office of Statewide Health Planning and Development (see Section 1.10.3)
OSHPD 4	Office of Statewide Health Planning and Development (see Section 1.10.4)
OSHPD 5	Office of Statewide Health Planning and Development (see Section 1.10.5)
DPH	Department of Public Health (see Section 1.7)
AGR	Department of Food and Agriculture (see Section 1.6)
CEC	California Energy Commission (see Section 100 in Part 6, the California Energy Code)
CA	Department of Consumer Affairs (see Section 1.4): Board of Barbering and Cosmetology Board of Examiners in Veterinary Medicine Board of Pharmacy Acupuncture Board Bureau of Household Goods & Services Structural Pest Control Board (SPCB)
SL	State Library (see Section 1.12)
SLC	State Lands Commission (see Section 1.14)
DWR	Department of Water Resources (see Section 1.13 of Chapter 1 of the California Plumbing Code in Part 2 of Title 24)

The state agencies are available to answer questions about their adoptions. Contact information is provided on page iv of this code.

To learn more about the use of this code refer to pages vii and viii. Training materials on the application and use of this code are available at the website of the California Building Standards Commission [www.dgs.ca.gov/bsc](http://www.dgs.ca.gov/bsc).



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3. In flood hazard areas other than coastal high hazard areas or coastal A zones, the elevation to which any nonresidential building will be dry floodproofed.
4. In coastal high hazard areas and coastal A zones, the proposed elevation of the bottom of the lowest horizontal structural member of the lowest floor, including the basement.

**1603.1.8 Special loads.** Special loads that are applicable to the design of the building, structure or portions thereof, including but not limited to the loads of machinery or equipment, and that are greater than specified floor and roof loads shall be specified by their descriptions and locations.

**1603.1.8.1 Photovoltaic panel systems.** The dead load of rooftop-mounted photovoltaic panel systems, including rack support systems, shall be indicated on the construction documents.

**1603.1.9 Roof rain load data.** Rain intensity,  $i$  (in/hr) (cm/hr), shall be shown regardless of whether rain loads govern the design.

**1603.1.10 Systems and components requiring special inspections for seismic resistance.** Construction documents or specifications shall be prepared for those systems and components requiring special inspection for seismic resistance as specified in CBC Section 1705.13 by the registered design professional responsible for their design and shall be submitted for approval in accordance with LAMC Subsection 91.106.3.3. Reference to seismic standards in lieu of detailed drawings is acceptable.

## SECTION 1604 GENERAL DESIGN REQUIREMENTS

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

**1604.2 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.

**1604.3 Serviceability.** Structural systems and members thereof shall be designed to have adequate stiffness to limit deflections as indicated in Table 1604.3.

**1604.3.1 Deflections.** The deflections of structural members shall not exceed the more restrictive of the limitations of Sections 1604.3.2 through 1604.3.5 or that permitted by Table 1604.3.

**1604.3.2 Reinforced concrete.** The deflection of reinforced concrete structural members shall not exceed that permitted by ACI 318.

**1604.3.3 Steel.** The deflection of steel structural members shall not exceed that permitted by AISC 360, AISI S100, ASCE 8, SJI 100 or SJI 200, as applicable.

**1604.3.4 Masonry.** The deflection of masonry structural members shall not exceed that permitted by TMS 402.

**1604.3.5 Aluminum.** The deflection of aluminum structural members shall not exceed that permitted by AA ADM.

**1604.3.6 Limits.** The deflection limits of Section 1604.3.1 shall be used unless more restrictive deflection limits are required by a referenced standard for the element or finish material.

**1604.3.7 Framing supporting glass.** The deflection of framing members supporting glass subjected to 0.6 times the “component and cladding” wind loads shall not exceed either of the following:

1.  $\frac{1}{175}$  of the length of span of the framing member, for framing members having a length not more than 13 feet 6 inches (4115 mm).
2.  $\frac{1}{240}$  of the length of span of the framing member +  $\frac{1}{4}$  inch (6.4 mm), for framing members having a length greater than 13 feet 6 inches (4115 mm).

**1604.4 Analysis.** Load effects on structural members and their connections shall be determined by methods of structural analysis that take into account equilibrium, general stability, geometric compatibility and both short- and long-term material properties.

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

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

The total lateral force shall be distributed to the various vertical elements of the lateral force-resisting system in proportion to their rigidities, considering the rigidity of the horizontal bracing system or diaphragm. Rigid elements assumed not to be a part of the lateral force-resisting system are permitted to be incorporated into buildings provided that their effect on the action of the system is considered and provided for in the design. 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. Where required by ASCE 7, provisions shall be made for the increased forces induced on resisting elements of the structural system resulting from torsion due to eccentricity between the center of application of the lateral forces and the center of rigidity of the lateral force-resisting system.

Every structure shall be designed to resist the effects caused by the forces specified in this chapter, including over-

**TABLE 1604.3**  
**DEFLECTION LIMITS<sup>a, b, c, h, i</sup>**

CONSTRUCTION	$L$ or $L_r$	$S$ or $W^f$	$D + L^{d, g}$
Roof members: <sup>c</sup>			
Supporting plaster or stucco 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:			
With plaster or stucco finishes	—	$l/360$	—
With other brittle finishes	—	$l/240$	—
With flexible finishes	—	$l/120$	—
Interior partitions: <sup>b</sup>			
With plaster or stucco finishes	$l/360$	—	—
With other brittle finishes	$l/240$	—	—
With flexible finishes	$l/120$	—	—
Farm buildings	—	—	$l/180$
Greenhouses	—	—	$l/120$

For SI: 1 foot = 304.8 mm.

- 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.
- 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 1607.16.
- See Section 2403 for glass supports.
- The deflection limit for the  $D + (L + L_r)$  load combination only applies to the deflection due to the creep component of long-term dead load deflection plus the short-term live load deflection. For lumber, structural glued laminated timber, prefabricated wood I-joists and structural composite lumber members that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection shall be permitted to be estimated as the immediate dead load deflection resulting from  $0.5D$ . For lumber and glued laminated timber members installed or used at all other moisture conditions or cross laminated timber and wood structural panels that are dry at time of installation and used under dry conditions in accordance with the ANSI/AWC NDS, the creep component of the long-term deflection is permitted to be estimated as the immediate dead load deflection resulting from  $D$ . The value of  $0.5D$  shall not be used in combination with ANSI/AWC NDS provisions for long-term loading.
- The preceding deflections do not ensure against ponding. Roofs that do not have sufficient slope or camber to ensure adequate drainage shall be investigated for ponding. See Chapter 8 of ASCE 7.
- The wind load shall be permitted to be taken as 0.42 times the “component and cladding” loads or directly calculated using the 10-year mean return interval wind speed for the purpose of determining deflection limits in Table 1604.3. Where framing members support glass, the deflection limit therein shall not exceed that specified in Section 1604.3.7
- For steel structural members, the deflection due to creep component of long-term dead load shall be permitted to be taken as zero.
- 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  $l/120$ .
- $l$  = Length of the member between supports. For cantilever members,  $l$  shall be taken as twice the length of the cantilever.

turning, uplift and sliding. Where sliding is used to isolate the elements, the effects of friction between sliding elements shall be included as a force.

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

**Exception:** The assignment of buildings and structures to Tsunami *Risk Categories* III and IV is permitted to be in accordance with Section 6.4 of ASCE 7.

**1604.5.1 Multiple occupancies.** Where a building or structure is occupied by two or more occupancies not included in

the same risk category, it shall be assigned the classification of the highest risk category corresponding to the various occupancies. Where buildings or structures have two or more portions that are structurally separated, each portion shall be separately classified. Where a separated portion of a building or structure provides required access to, required egress from or shares life safety components with another portion having a higher risk category, both portions shall be assigned to the higher risk category.

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

3. Subject to the limitations of Section 1609.1.1.1, residential structures using the provisions of AISI S230.
4. Designs using NAAMM FP 1001.
5. Designs using TIA-222 for antenna-supporting structures and antennas, provided that the horizontal extent of Topographic Category 2 escarpments in Section 2.6.6.2 of TIA-222 shall be 16 times the height of the escarpment.
6. Wind tunnel tests in accordance with ASCE 49 and Sections 31.4 and 31.5 of ASCE 7.

The wind speeds in Figures 1609.3(1) through 1609.3(12) are basic design wind speeds,  $V$ , and shall be converted in accordance with Section 1609.3.1 to allowable stress design wind speeds,  $V_{asd}$ , when the provisions of the standards referenced in Exceptions 4 and 5 are used.

**1609.1.1.1 Applicability.** The provisions of ICC 600 are applicable only to buildings located within Exposure B or C as defined in Section 1609.4. The provisions of ICC 600, AWC WFCM and AISI S230 shall not apply to buildings sited on the upper half of an isolated hill, ridge or escarpment meeting all of the following conditions:

1. The hill, ridge or escarpment is 60 feet (18 288 mm) or higher if located in Exposure B or 30 feet (9144 mm) or higher if located in Exposure C.
2. The maximum average slope of the hill exceeds 10 percent.
3. The hill, ridge or escarpment is unobstructed upwind by other such topographic features for a distance from the high point of 50 times the height of the hill or 2 miles (3.22 km), whichever is greater.

**1609.1.1.2 High wind velocity areas.** The Superintendent of Building may designate certain areas of the City as “high wind velocity areas” when evidence or studies indicate that the wind velocity results in damage to structures conforming to the minimum requirements of this Code. The Superintendent of Building may specify additional requirements over and above those required by this Code with respect to the following:

1. Glazing of openings in exterior walls.
2. Anchorage of post and beam construction.
3. Cantilever overhangs.
4. Roofing and roof framing.

**1609.2 Protection of openings.** In windborne debris regions, glazing in buildings shall be impact resistant or protected with an impact-resistant covering meeting the requirements of an approved impact-resistant standard or ASTM E1996 referenced herein as follows:

1. Glazed openings located within 30 feet (9144 mm) of grade shall meet the requirements of the large missile test of ASTM E1996.
2. Glazed openings located more than 30 feet (9144 mm) above grade shall meet the provisions of the small missile test of ASTM E1996.

**Exceptions:**

1. Wood structural panels with a minimum thickness of  $\frac{7}{16}$  inch (11.1 mm) and maximum panel span of 8 feet (2438 mm) shall be permitted for opening protection in buildings with a mean roof height of 33 feet (10 058 mm) or less that are classified as a Group R-3 or R-4 occupancy. Panels shall be precut so that they shall be attached to the framing surrounding the opening containing the product with the glazed opening. Panels shall be predrilled as required for the anchorage method and shall be secured with the attachment hardware provided. Attachments shall be designed to resist the components and cladding loads determined in accordance with the provisions of ASCE 7, with corrosion-resistant attachment hardware provided and anchors permanently installed on the building. Attachment in accordance with Table 1609.2 with corrosion-resistant attachment hardware provided and anchors permanently installed on the building is permitted for buildings with a mean roof height of 45 feet (13 716 mm) or less where  $V_{asd}$  determined in accordance with Section 1609.3.1 does not exceed 140 mph (63 m/s).
2. Glazing in *Risk Category* I buildings, including greenhouses that are occupied for growing plants on a production or research basis, without public access shall be permitted to be unprotected.
3. Glazing in *Risk Category* II, III or IV buildings located over 60 feet (18 288 mm) above the ground and over 30 feet (9144 mm) above aggregate surface roofs located within 1,500 feet (458 m) of the building shall be permitted to be unprotected.

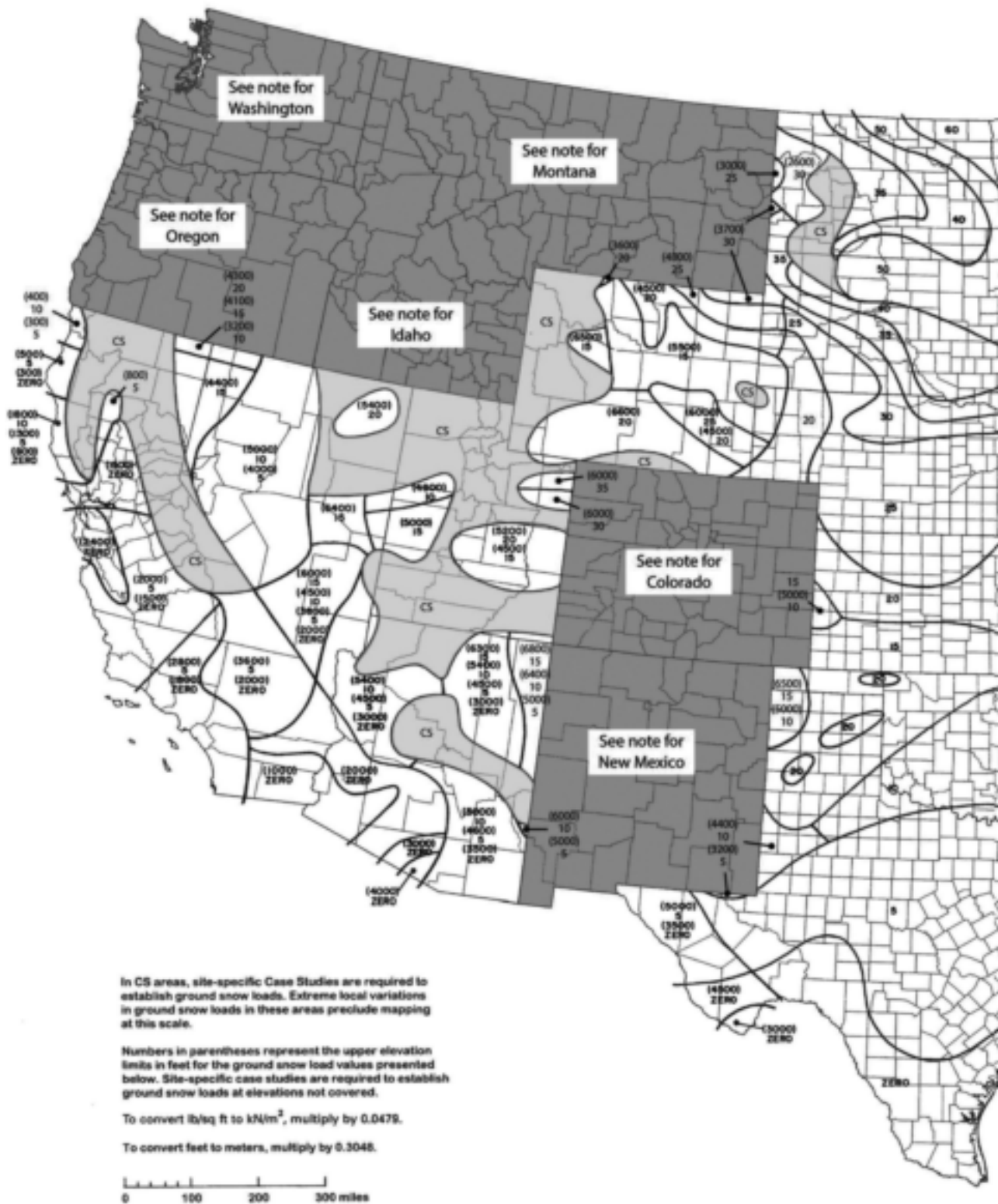
**1609.2.1 Louvers.** Louvers protecting intake and exhaust ventilation ducts not assumed to be open that are located within 30 feet (9144 mm) of grade shall meet the requirements of AMCA 540.

**TABLE 1609.2**  
**WINDBORNE DEBRIS PROTECTION FASTENING SCHEDULE FOR WOOD STRUCTURAL PANELS<sup>a, b, c, d</sup>**

FASTENER TYPE	FASTENER SPACING (inches)		
	Panel Span ≤ 4 feet	4 feet < Panel Span ≤ 6 feet	6 feet < Panel Span ≤ 8 feet
No. 8 wood-screw-based anchor with 2-inch embedment length	16	10	8
No. 10 wood-screw-based anchor with 2-inch embedment length	16	12	9
$\frac{1}{4}$ -inch diameter lag-screw-based anchor with 2-inch embedment length	16	16	16

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound = 4.448 N, 1 mile per hour = 0.447 m/s.

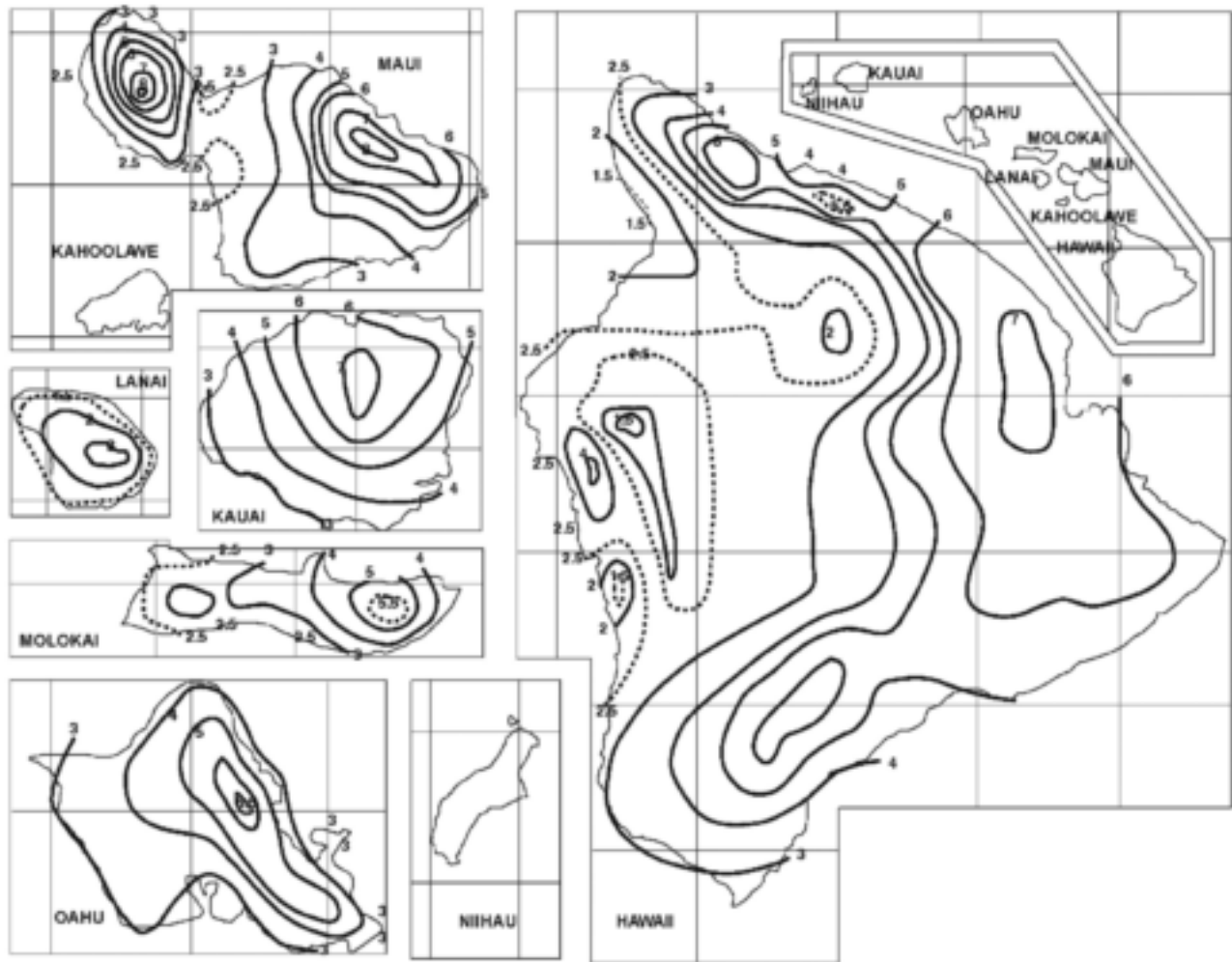
- a. This table is based on 140 mph wind speeds and a 45-foot mean roof height.
- b. Fasteners shall be installed at opposing ends of the wood structural panel. Fasteners shall be located not less than 1 inch from the edge of the panel.
- c. Anchors shall penetrate through the exterior wall covering with an embedment length of 2 inches minimum into the building frame. Fasteners shall be located not less than  $2\frac{1}{2}$  inches from the edge of concrete block or concrete.
- d. Where panels are attached to masonry or masonry/stucco, they shall be attached using vibration-resistant anchors having a minimum ultimate withdrawal capacity of 1,500 pounds.



NOTE: See ASCE 7 Table 7.2-2 for Colorado, Table 7.2-3 for Idaho, Table 7.2-4 for Montana, Table 7.2-5 for Washington, Table 7.2-6 for New Mexico and Table 7.2-7 for Oregon.

FIGURE 1608.2(1)  
GROUND SNOW LOADS,  $p_g$ , FOR THE UNITED STATES (psf)





For SI: 1 inch = 25.4 mm.

Source: National Weather Service, National Oceanic and Atmospheric Administration, Washington, DC.

**FIGURE 1611.1(5)**  
**100-YEAR, 1-HOUR RAINFALL (INCHES) HAWAII**

## SECTION 1612 FLOOD LOADS

**1612.1 General.** Within flood hazard areas as established in Section 1612.3, all new construction of buildings, structures and portions of buildings and structures, including substantial improvement and restoration of substantial damage to buildings and structures, shall be designed and constructed to resist the effects of flood hazards and flood loads. For buildings that are located in more than one flood hazard area, the provisions associated with the most restrictive flood hazard area shall apply.

**1612.2 Design and construction.** The design and construction of buildings and structures located in flood hazard areas, including coastal high hazard areas and coastal A zones, shall be in accordance with Chapter 5 of ASCE 7 and ASCE 24.

**1612.3 Establishment of flood hazard areas.** To establish flood hazard areas, the applicable governing authority shall adopt a flood hazard map and supporting data. The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency in an engineering report entitled "The Flood Insurance Study for The City of Los Angeles," dated June 2, 2012, as amended or revised with the accompanying Flood Insurance Rate Map (FIRM) and Flood Boundary and Floodway Map (FBFM) and related supporting data along with any revisions thereto. The adopted flood hazard map and supporting data are hereby adopted by reference and declared to be part of this section.

**Exception: [OSHPD 1R, 2 & 5]** *The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency's Flood Insurance Study (FIS) adopted by the local authority having jurisdiction where the project is located.*

**1612.3.1 Design flood elevations.** Where design flood elevations are not included in the flood hazard areas established in Section 1612.3, or where floodways are not designated, the building official is authorized to require the applicant to do one of the following:

1. Obtain and reasonably utilize any design flood elevation and floodway data available from a federal, state or other source.
2. Determine the design flood elevation or floodway in accordance with accepted hydrologic and hydraulic engineering practices used to define special flood hazard areas. Determinations shall be undertaken by a registered design professional who shall document that the technical methods used reflect currently accepted engineering practice.

**1612.3.2 Determination of impacts.** In riverine flood hazard areas where design flood elevations are specified but floodways have not been designated, the applicant shall provide a floodway analysis that demonstrates that the proposed work will not increase the design flood elevation more than 1 foot (305 mm) at any point within the jurisdiction of the applicable governing authority.

**1612.4 Flood hazard documentation.** The following documentation shall be prepared and sealed by a registered design professional and submitted to the building official:

1. For construction in flood hazard areas other than coastal high hazard areas or coastal A zones:
  - 1.1. The elevation of the lowest floor, including the basement, as required by the lowest floor elevation inspection in Section 110.3.3 and for the final inspection in Section 110.3.12.1.
  - 1.2. For fully enclosed areas below the design flood elevation where provisions to allow for the automatic entry and exit of floodwaters do not meet the minimum requirements in Section 2.7.2.1 of ASCE 24, construction documents shall include a statement that the design will provide for equalization of hydrostatic flood forces in accordance with Section 2.7.2.2 of ASCE 24.
  - 1.3. For dry floodproofed nonresidential buildings, construction documents shall include a statement that the dry floodproofing is designed in accordance with ASCE 24 and shall include the flood emergency plan specified in Chapter 6 of ASCE 24.
2. For construction in coastal high hazard areas and coastal A zones:
  - 2.1. The elevation of the bottom of the lowest horizontal structural member as required by the lowest floor elevation inspection in Section 110.3.3 and for the final inspection in Section 110.3.12.1.
  - 2.2. Construction documents shall include a statement that the building is designed in accordance with ASCE 24, including that the pile or column foundation and building or structure to be attached thereto is designed to be anchored to resist flotation, collapse and lateral movement due to the effects of wind and flood loads acting simultaneously on all building components, and other load requirements of Chapter 16.
  - 2.3. For breakaway walls designed to have a resistance of more than 20 psf (0.96 kN/m<sup>2</sup>) determined using allowable stress design, construction documents shall include a statement that the breakaway wall is designed in accordance with ASCE 24.
  - 2.4. For breakaway walls where provisions to allow for the automatic entry and exit of floodwaters do not meet the minimum requirements in Section 2.7.2.1 of ASCE 24, construction documents shall include a statement that the design will provide for equalization of hydrostatic flood forces in accordance with Section 2.7.2.2 of ASCE 24.

## SECTION 1613 EARTHQUAKE LOADS

**1613.1 Scope.** Every structure, and portion thereof, including nonstructural components that are permanently attached to

structures and their supports and attachments, shall be designed and constructed to resist the effects of earthquake motions in accordance with Chapters 11, 12, 13, 15, 17 and 18 of ASCE 7, as applicable. The seismic design category for a structure is permitted to be determined in accordance with Section 1613 or ASCE 7.

**Exceptions:**

1. Detached one- and two-family dwellings, assigned to *Seismic Design Category A, B or C*, or located where the mapped short-period spectral response acceleration,  $S_s$ , is less than 0.4 g.
2. The seismic force-resisting system of wood-frame buildings that conform to the provisions of Section 2308 are not required to be analyzed as specified in this section. **[OSHPD 1R, 2 & 5] Not permitted by OSHPD, see Section 2308.**
3. Agricultural storage structures intended only for incidental human occupancy.
4. Structures that require special consideration of their response characteristics and environment that are not addressed by this code or ASCE 7 and for which other regulations provide seismic criteria, such as vehicular bridges, electrical transmission towers, hydraulic structures, buried utility lines and their appurtenances and nuclear reactors.
5. References within ASCE 7 to Chapter 14 shall not apply, except as specifically required herein.
6. **[OSHPD 1R, 2 & 5] Seismic Design Category shall be in accordance with exception to Section 1613.2.5.**

**1613.1.1 Scope. [SL]** For applications listed in Section 1.12 regulated by the State Librarian, only the provisions of ASCE 7 Tables 13.5-1 and 1607.1, as amended, of this code shall apply.

**1613.1.2 State-owned buildings. [BSC]** State-owned buildings, including those of the University of California, CSU and Judicial Council, shall not be constructed where any portion of the foundation would be within a mapped area of earthquake-induced liquefaction or landsliding or within 50 feet of a mapped fault rupture hazard as established by Section 1803.7.

**1613.1.3 Existing state buildings. [BSC]** Additions, alterations, repairs or change of occupancy category of existing buildings shall be in accordance with the California Existing Building Code, Part 10.

**1613.2 Seismic ground motion values.** Seismic ground motion values shall be determined in accordance with this section.

**1613.2.1 Mapped acceleration parameters.** The parameters  $S_s$  and  $S_1$  shall be determined from the 0.2 and 1-second spectral response accelerations shown on Figures 1613.2.1(1) through 1613.2.1(10). Where  $S_1$  is less than or equal to 0.04 and  $S_s$  is less than or equal to 0.15, the structure is permitted to be assigned *Seismic Design Category A*.

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

**1613.2.2 Site class definitions.** Based on the site soil properties, the site shall be classified as *Site Class A, B, C, D, E or F* in accordance with Chapter 20 of ASCE 7.

Where the soil properties are not known in sufficient detail to determine the site class, *Site Class D*, subjected to the requirements of Section 1613.2.3, shall be used unless the building official or geotechnical data determines that *Site Class E or F* soils are present at the site.

Where site investigations that are performed in accordance with Chapter 20 of ASCE 7 reveal rock conditions consistent with *Site Class B*, but site-specific velocity measurements are not made, the site coefficients  $F_a$  and  $F_v$  shall be taken at unity (1.0).

**1613.2.3 Site coefficients and adjusted maximum considered earthquake spectral response acceleration parameters.** The maximum considered earthquake spectral response acceleration for short periods,  $S_{MS}$ , and at 1-second period,  $S_{MI}$ , adjusted for site class effects shall be determined by Equations 16-20 and 16-21, respectively:

$$S_{MS} = F_a S_s \quad \text{(Equation 16-20)}$$

$$S_{MI} = F_v S_1 \quad \text{(Equation 16-21)}$$

but  $S_{MS}$  shall not be taken less than  $S_{MI}$  except when determining the seismic design category in accordance with Section 1613.2.5.

where:

$F_a$  = Site coefficient defined in Table 1613.2.3(1).

$F_v$  = Site coefficient defined in Table 1613.2.3(2).

$S_s$  = The mapped spectral accelerations for short periods as determined in Section 1613.2.1.

$S_1$  = The mapped spectral accelerations for a 1-second period as determined in Section 1613.2.1.

Where *Site Class D* is selected as the default site class per Section 1613.2.2, the value of  $F_a$  shall be not less than 1.2. Where the simplified design procedure of ASCE 7, Section 12.14 is used, the value of  $F_a$  shall be determined in accordance with ASCE 7, Section 12.14.8.1, and the values of  $F_v$ ,  $S_{MS}$  and  $S_{MI}$  need not be determined.

**1613.2.4 Design spectral response acceleration parameters.** Five-percent damped design spectral response acceleration at short periods,  $S_{DS}$ , and at 1-second period,  $S_{DI}$ , shall be determined from Equations 16-22 and Equation 16-23, respectively:

$$S_{DS} = \frac{2}{3} S_{MS} \quad \text{(Equation 16-22)}$$

$$S_{DI} = \frac{2}{3} S_{MI} \quad \text{(Equation 16-23)}$$

where:

$S_{MS}$  = The maximum considered earthquake spectral response accelerations for short period as determined in Section 1613.2.3.

$S_{MI}$  = The maximum considered earthquake spectral response accelerations for 1-second period as determined in Section 1613.2.3.

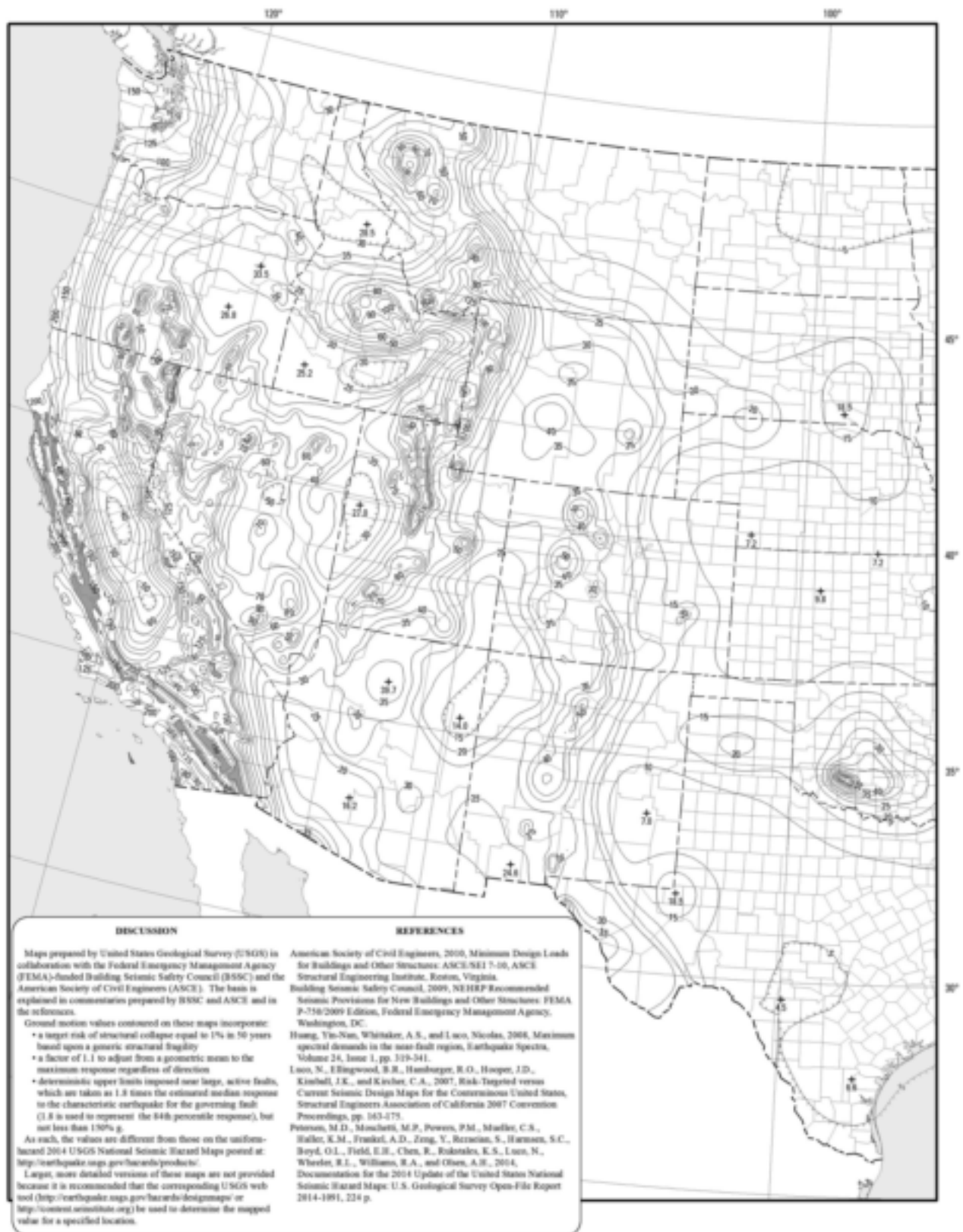


FIGURE 1613.2.1(1)  
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE ( $MCE_R$ ) GROUND MOTION RESPONSE ACCELERATIONS FOR THE  
CONTINUOUS UNITED STATES OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)



**FIGURE 1613.2.1(2)**  
**RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE ( $MCE_R$ ) GROUND MOTION RESPONSE ACCELERATIONS FOR THE**  
**CONTIGUOUS UNITED STATES OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)**

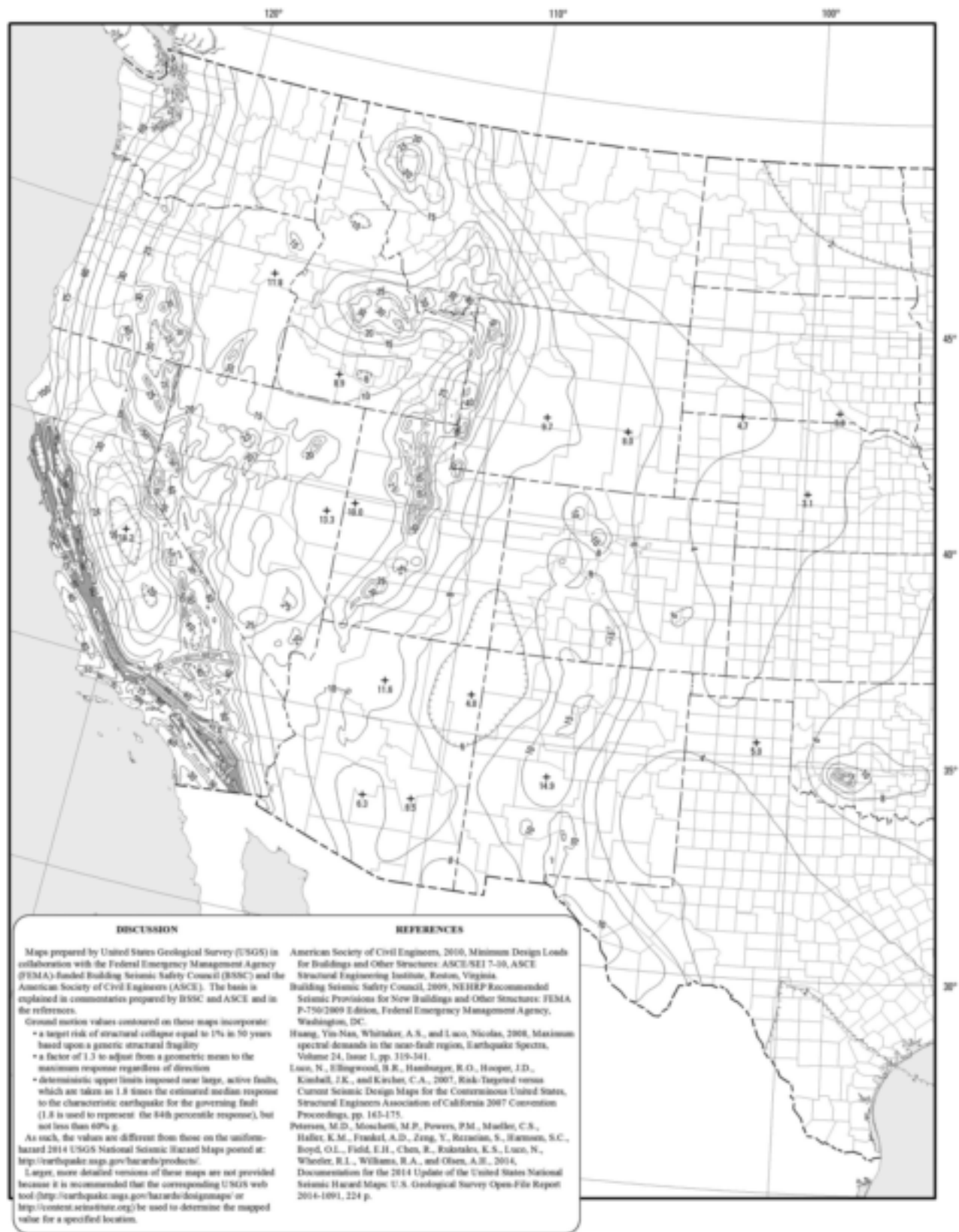


FIGURE 1613.2.1(3)  
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE ( $MCE_R$ ) GROUND MOTION RESPONSE ACCELERATIONS FOR THE  
CONTERMINOUS UNITED STATES OF 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)

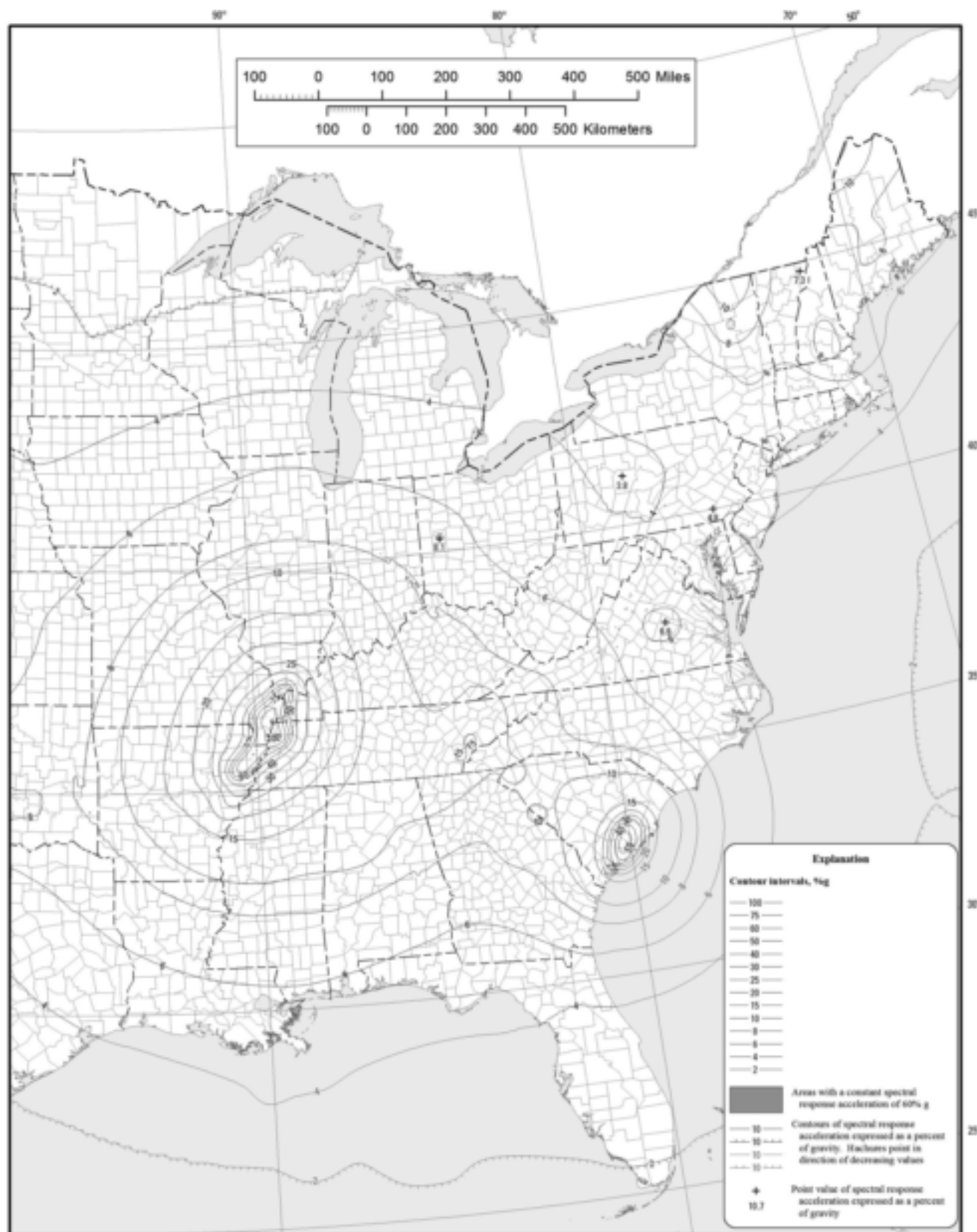


FIGURE 1613.2.1(4)  
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE ( $MCE_R$ ) GROUND MOTION RESPONSE ACCELERATIONS FOR THE  
COTERMINOUS UNITED STATES OF 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)

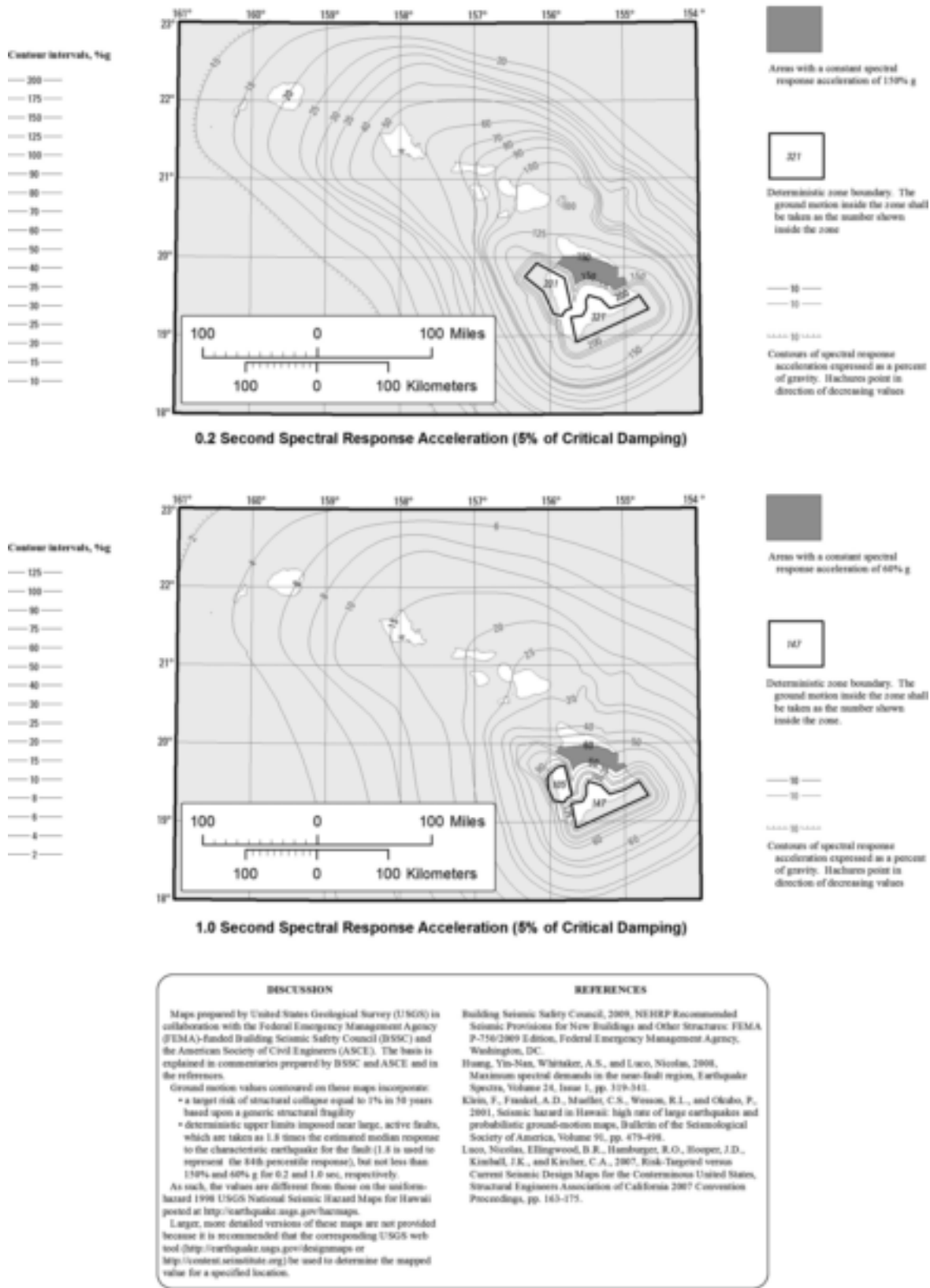


FIGURE 1613.2.1(5)  
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE ( $MCE_E$ ) GROUND MOTION RESPONSE ACCELERATIONS  
FOR HAWAII OF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)



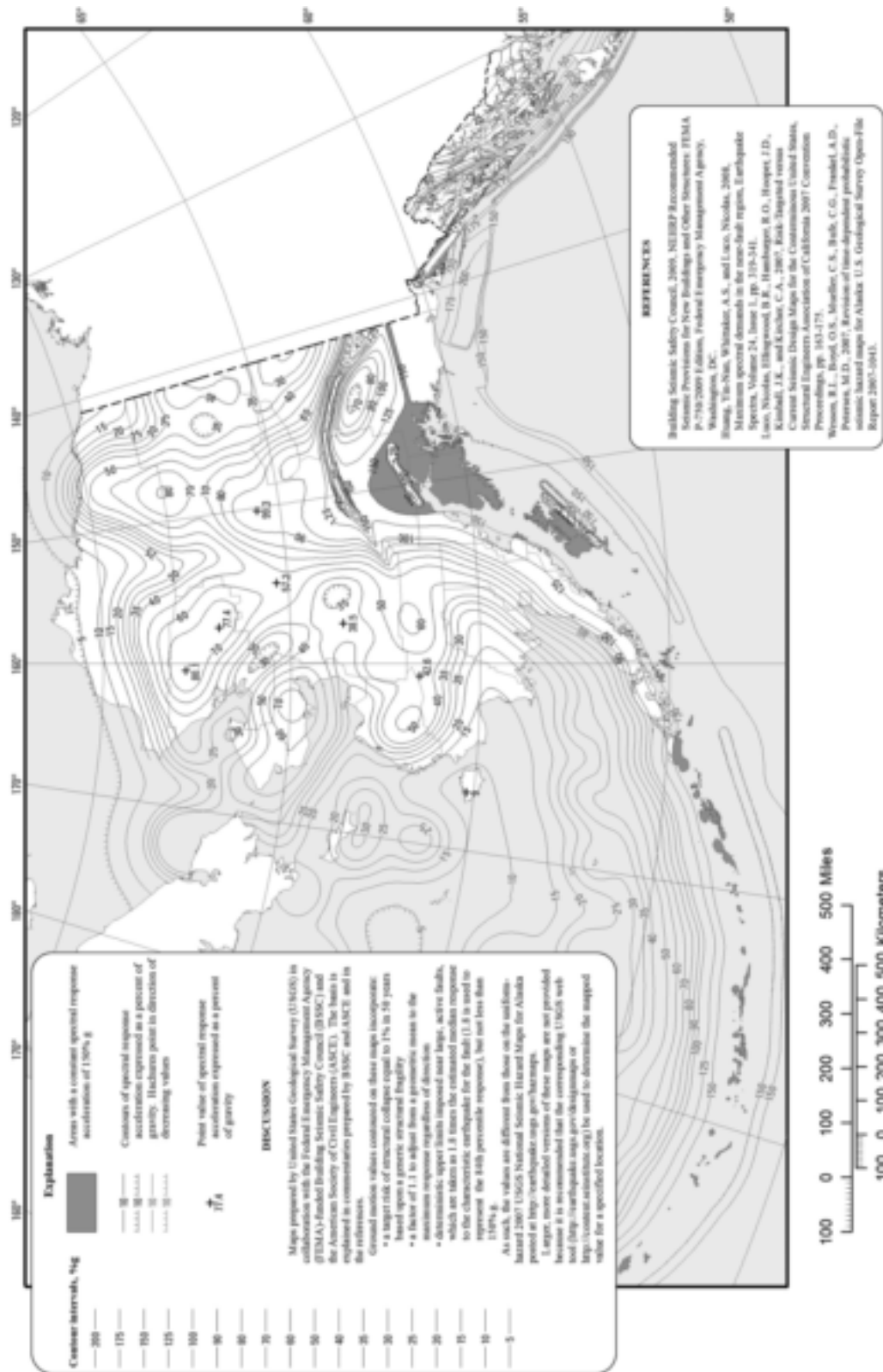


FIGURE 1613.2.1(6)  
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE) GROUND MOTION RESPONSE ACCELERATIONS  
FOR ALASKA OF 0.2-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)

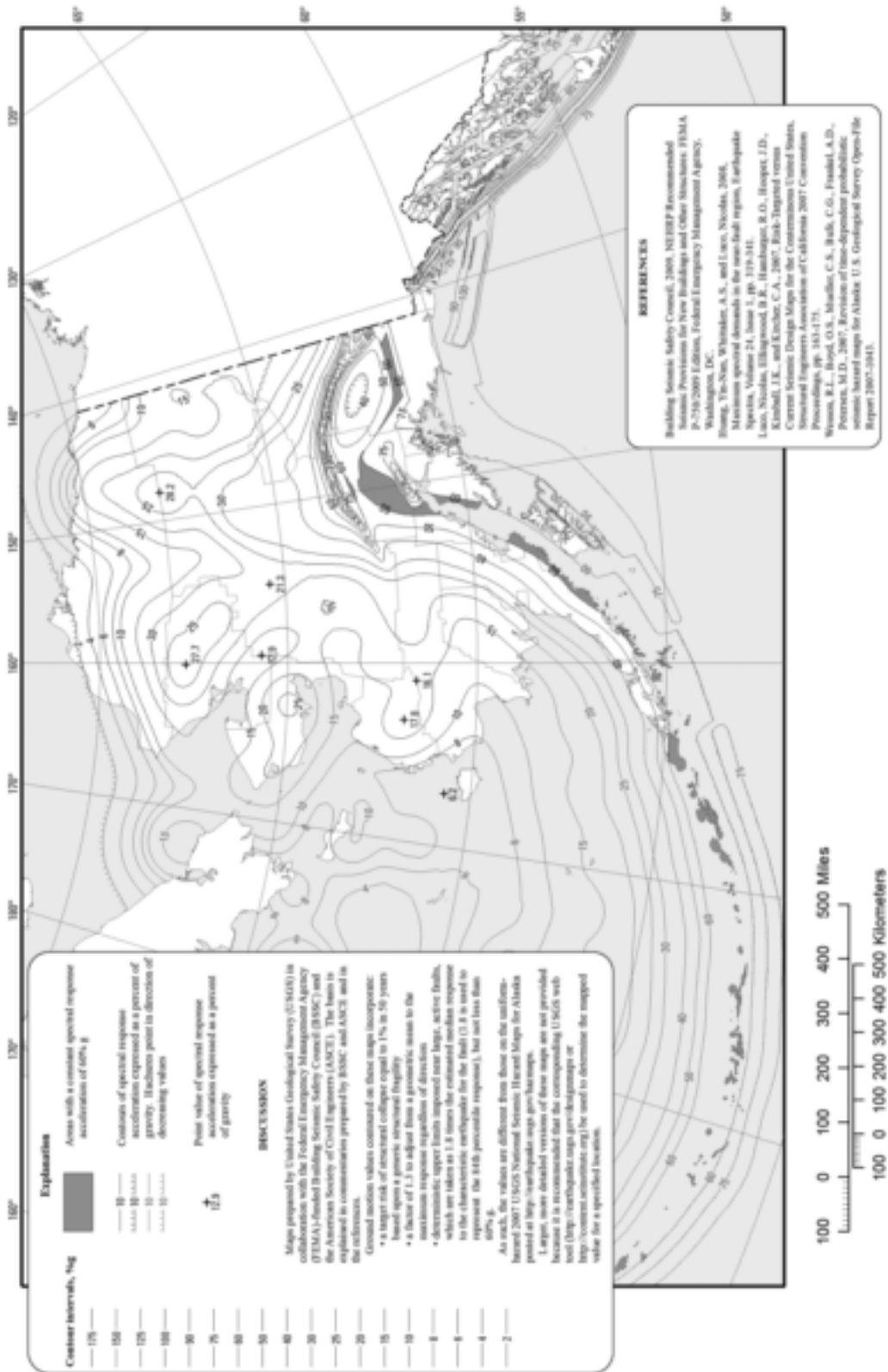


FIGURE 1613.2.1(7) RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE<sub>a</sub>) GROUND MOTION RESPONSE ACCELERATIONS FOR ALASKA OF 1.0-SECOND SPECTRAL RESPONSE ACCELERATION (5% OF CRITICAL DAMPING)

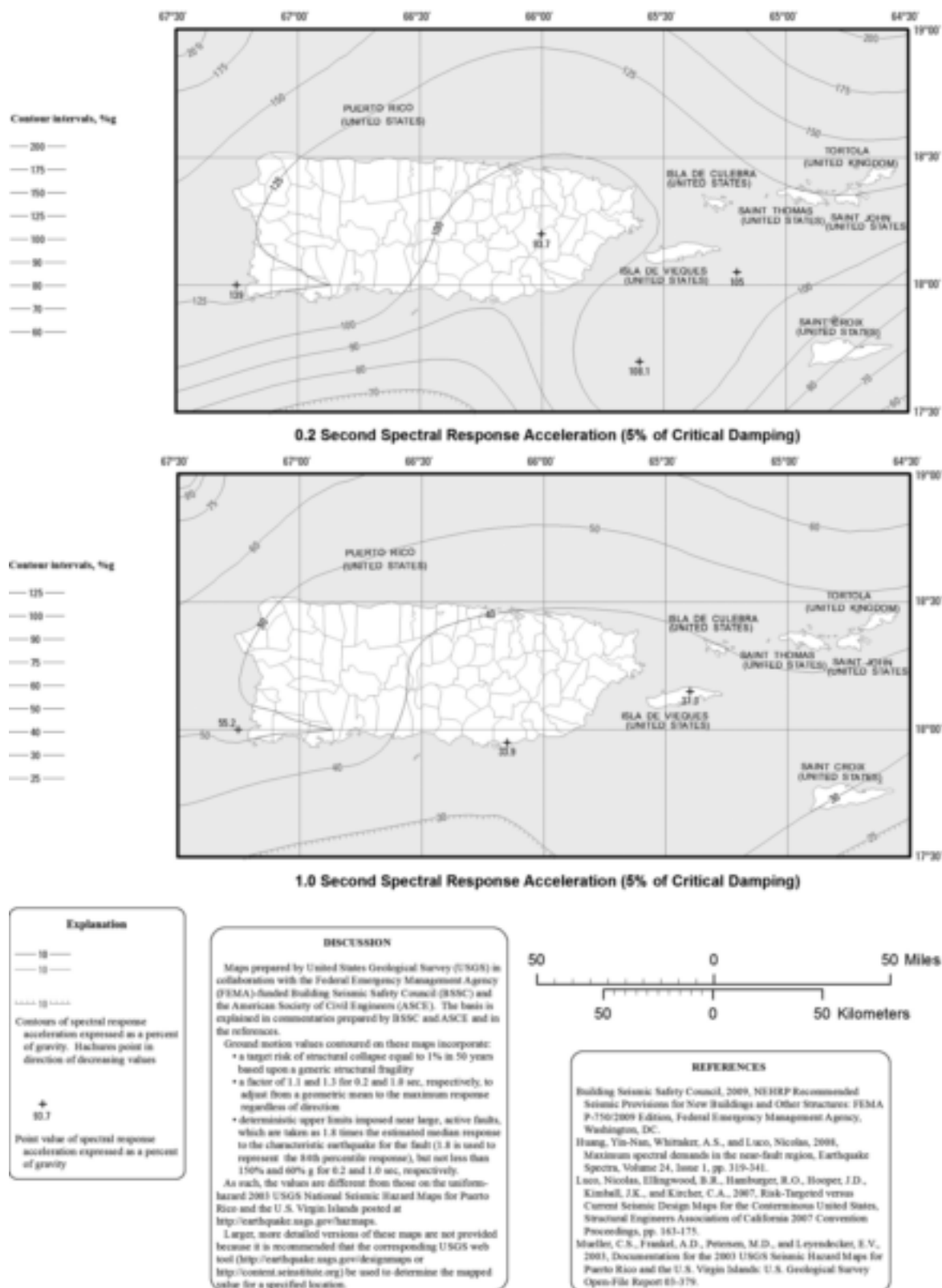


FIGURE 1613.2.1(8)  
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE ( $MCE_R$ ) GROUND MOTION RESPONSE ACCELERATIONS  
FOR PUERTO RICO AND THE UNITED STATES VIRGIN ISLANDS OF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION  
(5% OF CRITICAL DAMPING)

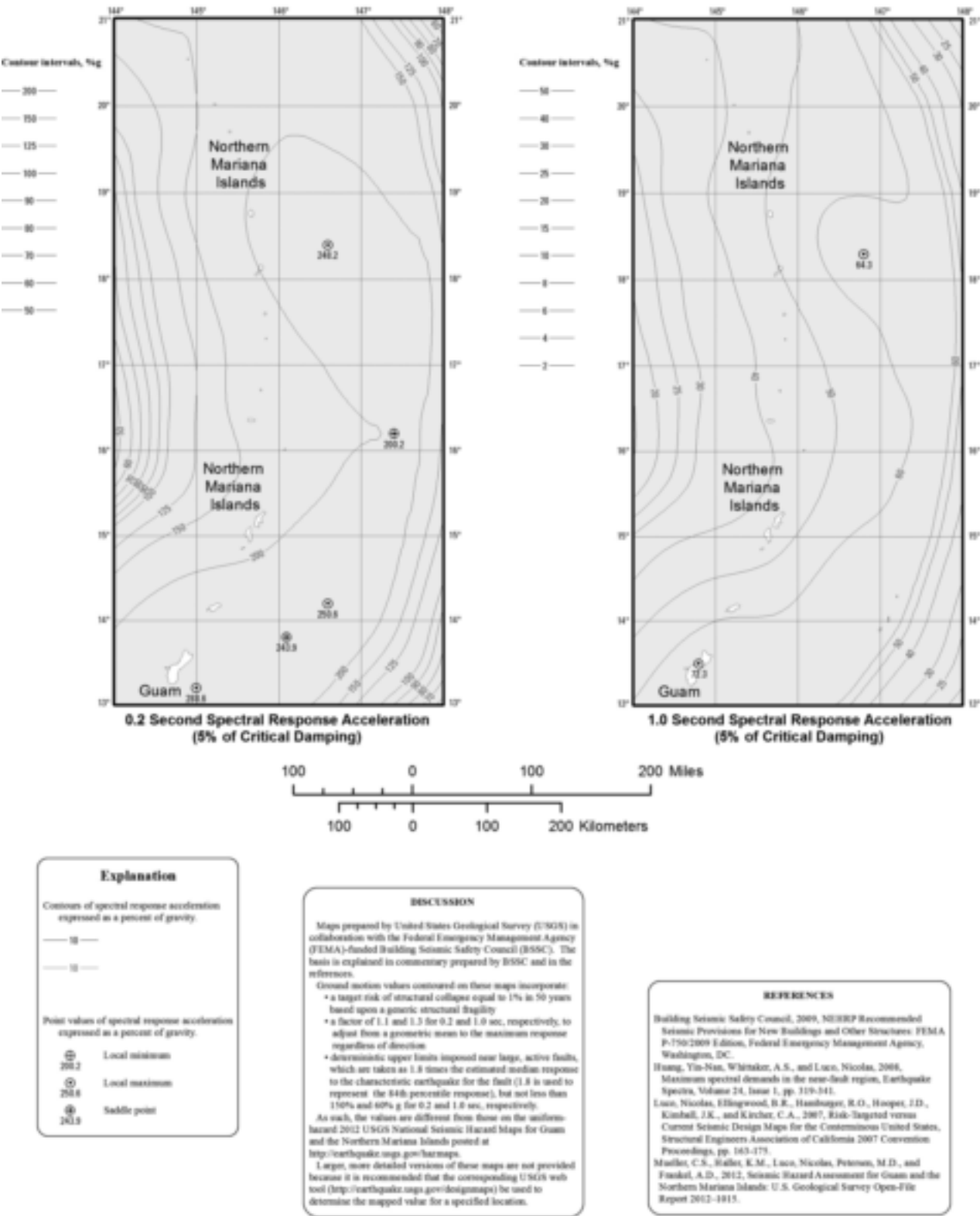


FIGURE 1613.2.1(9)  
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE<sub>R</sub>) GROUND MOTION RESPONSE ACCELERATIONS  
FOR GUAM AND THE NORTHERN MARIANA ISLANDS OF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION  
(5% OF CRITICAL DAMPING)

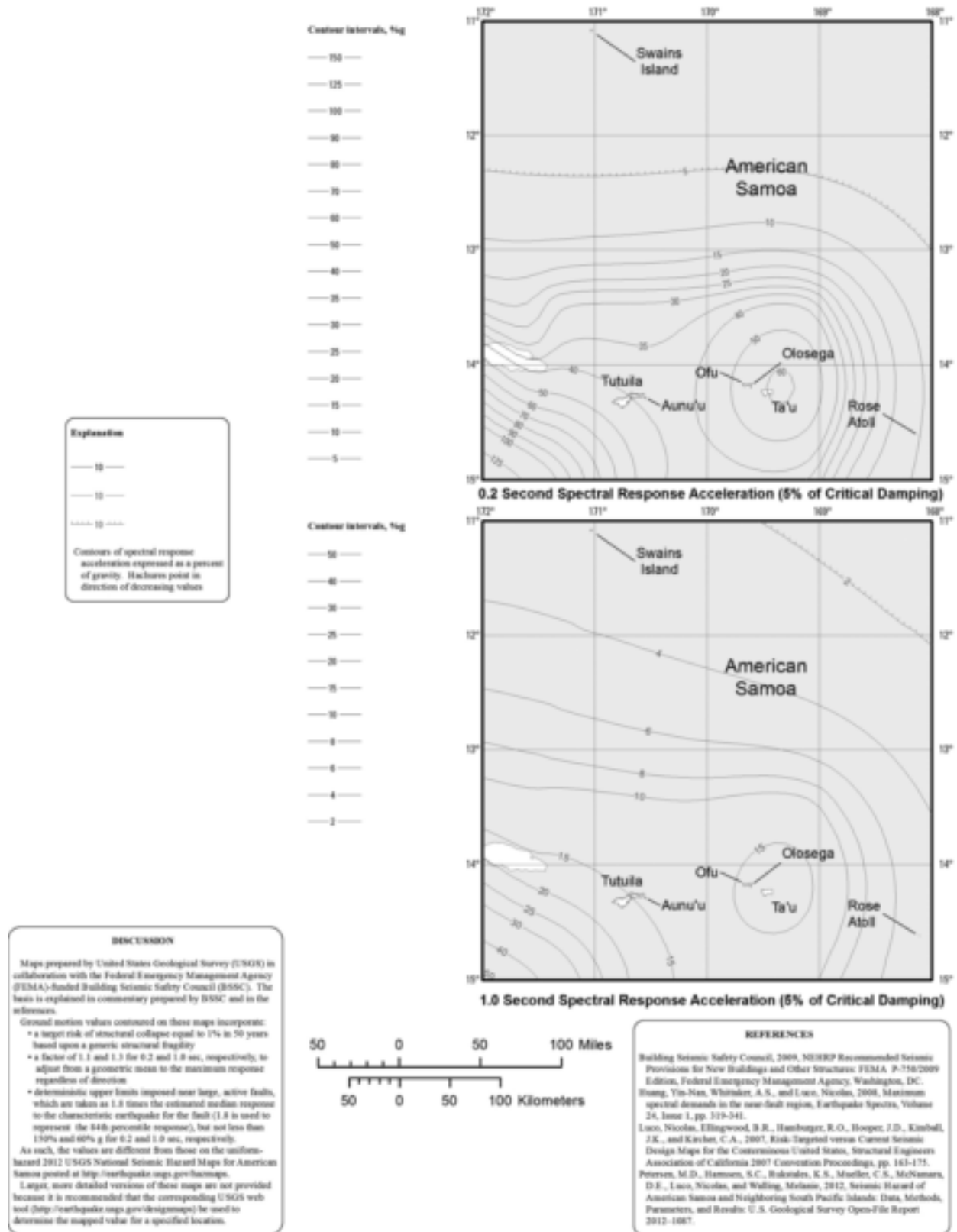


FIGURE 1613.2.1(10)  
RISK-TARGETED MAXIMUM CONSIDERED EARTHQUAKE ( $MCE_R$ ) GROUND MOTION RESPONSE ACCELERATIONS  
FOR AMERICAN SAMOA OF 0.2- AND 1-SECOND SPECTRAL RESPONSE ACCELERATION  
(5% OF CRITICAL DAMPING)

**TABLE 1613.2.3(1) [OSHDP 1R, 2 & 5]  
VALUES OF SITE COEFFICIENT  $F_a$ <sup>a</sup>**

SITE CLASS	MAPPED RISK TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE <sub>R</sub> ) SPECTRAL RESPONSE ACCELERATION PARAMETER AT SHORT PERIOD					
	$S_s \leq 0.25$	$S_s = 0.50$	$S_s = 0.75$	$S_s = 1.00$	$S_s = 1.25$	$S_s \geq 1.5$
A	0.8	0.8	0.8	0.8	0.8	0.8
B	0.9	0.9	0.9	0.9	0.9	0.9
C	1.3	1.3	1.2	1.2	1.2	1.2
D	1.6	1.4	1.2	1.1	1.0	1.0
E	2.4	1.7	1.3	1.2 <sup>c</sup>	1.2 <sup>c</sup>	1.2 <sup>c</sup>
F	Note b	Note b	Note b	Note b	Note b	Note b

a. Use straight-line interpolation for intermediate values of mapped spectral response acceleration at short period,  $S_s$ .

b. Values shall be determined in accordance with Section 11.4.8 of ASCE 7.

c. See requirements for site-specific ground motions in Section 11.4.8 of ASCE 7. These values of  $F_a$  shall only be used for calculation of  $T_s$ , determination of Seismic Design Category, linear interpolation for intermediate values of  $S_s$ , and when taking the exception under Item 2 within Section 11.4.8 of ASCE 7.

**TABLE 1613.2.3(2)  
VALUES OF SITE COEFFICIENT  $F_v$ <sup>a</sup>**

SITE CLASS	MAPPED RISK TARGETED MAXIMUM CONSIDERED EARTHQUAKE (MCE <sub>R</sub> ) SPECTRAL RESPONSE ACCELERATION PARAMETER AT 1-SECOND PERIOD					
	$S_1 \leq 0.1$	$S_1 = 0.2$	$S_1 = 0.3$	$S_1 = 0.4$	$S_1 = 0.5$	$S_1 \geq 0.6$
A	0.8	0.8	0.8	0.8	0.8	0.8
B	0.8	0.8	0.8	0.8	0.8	0.8
C	1.5	1.5	1.5	1.5	1.5	1.4
D	2.4	2.2 <sup>c</sup>	2.0 <sup>c</sup>	1.9 <sup>c</sup>	1.8 <sup>c</sup>	1.7 <sup>c</sup>
E	4.2	3.3 <sup>c</sup>	2.8 <sup>c</sup>	2.4 <sup>c</sup>	2.2 <sup>c</sup>	2.0 <sup>c</sup>
F	Note b	Note b	Note b	Note b	Note b	Note b

a. Use straight-line interpolation for intermediate values of mapped spectral response acceleration at 1-second period,  $S_1$ .

b. Values shall be determined in accordance with Section 11.4.8 of ASCE 7.

c. See requirements for site-specific ground motions in Section 11.4.8 of ASCE 7. [OSHDP 1R, 2 & 5] These values of  $F_v$  shall only be used for calculation of  $T_s$ , determination of Seismic Design Category, linear interpolation for intermediate values of  $S_1$ , and when taking the exceptions under Items 1 and 2 of Section 11.4.8 for the calculation of  $S_{DI}$ .

### 1613.2.5 Determination of seismic design category.

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

**Exception:** [OSHDP 1R, 2 & 5] Structures not assigned to *Seismic Design Category* E or F above shall be assigned to *Seismic Design Category* D.

### 1613.2.5.1 Alternative seismic design category determination.

Where  $S_1$  is less than 0.75, the seismic design category is permitted to be determined from Table 1613.2.5(1) alone where all of the following apply:

1. In each of the two orthogonal directions, the approximate fundamental period of the structure,  $T_a$ , in each of the two orthogonal directions determined in accordance with Section 12.8.2.1 of ASCE 7, is less than  $0.8 T_s$  determined in accordance with Section 11.8.6 of ASCE 7.
2. In each of the two orthogonal directions, the fundamental period of the structure used to calculate the story drift is less than  $T_s$ .
3. Equation 12.8-2 of ASCE 7 is used to determine the seismic response coefficient,  $C_s$ .
4. The diaphragms are rigid or are permitted to be idealized as rigid in accordance with Section 12.3.1 of ASCE 7 or, for diaphragms permitted to be idealized as flexible in accordance with Section 12.3.1 of ASCE 7, the distances between

vertical elements of the seismic force-resisting system do not exceed 40 feet (12 192 mm).

**Exception:** [OSHPD 1R, 2 & 5] Seismic design category shall be determined in accordance with exception to Section 1613.2.5.

**1613.2.5.2 Simplified design procedure.** Where the alternate simplified design procedure of ASCE 7 is used, the seismic design category shall be determined in accordance with ASCE 7.

**Exception:** [OSHPD 1R, 2 & 5] Seismic design category shall be determined in accordance with exception to Section 1613.2.5.

**1613.3 Ballasted photovoltaic panel systems.** Ballasted, roof-mounted photovoltaic panel systems need not be rigidly attached to the roof or supporting structure. Ballasted nonpenetrating systems shall be designed and installed only on roofs with slopes not more than one unit vertical in 12 units horizontal. Ballasted nonpenetrating systems shall be designed to resist sliding and uplift resulting from lateral and vertical forces as required by Section 1605, using a coefficient of friction determined by acceptable engineering principles. In structures assigned to *Seismic Design Category* C, D, E or F, ballasted nonpenetrating systems shall be designed to accommodate seismic displacement determined by nonlinear response-hi story or other approved analysis or shake-table testing, using input motions consistent with ASCE 7 lateral and vertical seismic forces for nonstructural components on roofs. [OSHPD 1R, 2 & 5] Ballasted photovoltaic panel systems shall be considered as an alternative system.

**1613.4 Component Importance Factors.** [OSHPD 1R, 2 & 5] Nonstructural components designated below shall have a component importance factor,  $I_p$ , equal to 1.5:

1. For components that are required for life-safety purposes after an earthquake, including emergency and standby power systems, mechanical smoke removal systems, fire protection sprinkler systems and fire alarm control panels.

2. For medical equipment required for patient life support.

**1613.5 Amendments to ASCE 7.** The provisions of Subsections 1613.5.1 through 1613.8 are amendments to the relevant provisions of ASCE 7.

**1613.5.1 ASCE supplements.** Supplements number 2 and 3 of ASCE 7 are hereby adopted by reference.

**1613.5.2.** ASCE 7, Section 12.2.3.1, Exception 3 is modified to read as follows:

3. Detached one- and two-family dwellings up to two stories in height of light frame construction.

**1613.5.3 General.** The text of ASCE 7, Section 12.11.2.2.3 is modified to read as follows:

**12.11.2.2.3 Wood diaphragms.** The anchorage of concrete or masonry structural walls to wood diaphragms shall be in accordance with AWC SDPWS 4.1.5.1 and this section. Continuous ties required by this section shall be in addition to the diaphragm sheathing. The diaphragm sheathing shall not be considered effective as providing ties or struts required by this Section.

For structures assigned to Seismic Design Category D, E or F, wood diaphragms supporting concrete or masonry walls shall comply with the following:

1. The spacing of continuous ties shall not exceed 40 feet (12.19 m). Added chords of diaphragms may be used to form subdiaphragms to transmit the anchorage forces to the main continuous cross-ties.
2. The maximum diaphragm shear used to determine the depth of the subdiaphragms shall not exceed 75 percent of the maximum diaphragm shear.

**1613.5.4.** Equation 12.2-1 of ASCE 7, Section 12.12.3 is modified to read as follows:

$$\delta_M = C_d \delta_{max}$$

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

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

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

VALUE OF $S_{DI}$	RISK CATEGORY		
	I or II	III	IV
$S_{DI} < 0.067g$	A	A	A
$0.067g \leq S_{DI} < 0.133g$	B	B	C
$0.133g \leq S_{DI} < 0.20g$	C	C	D
$0.20g \leq S_{DI}$	D	D	D

**1613.6 Reserved.****1613.7 Reserved.****1613.8 Additional seismic requirements.**

**1613.8.1 Scope.** This part contains special requirements for suspended ceilings and lighting systems. The provisions of Section 13.5.6 of ASCE 7 shall apply except as modified here.

**1613.8.1.2 Design and installation requirements.**

**1613.8.1.2.1 General.** The suspended ceilings and lighting systems shall be limited to 6 feet (1828 mm) below the structural deck unless the lateral bracing is designed by a licensed engineer or architect.

**1613.8.1.2.2 Bracing at discontinuity.** Positive bracing to the structure shall be provided at changes in the ceiling plane elevation or at discontinuities in the ceiling grid system.

**1613.8.1.2.3 Support for appendages.** Cable trays, electrical conduits and piping shall be independently supported and independently braced from the structure.

**1613.8.1.2.4 Sprinkler heads.** All sprinkler heads (drops), except fire-resistance rated floor/ceiling or roof/ceiling assemblies, shall be designed to allow for free movement of the sprinkler pipes with oversize rings, sleeves or adapters through the ceiling tile.

Sprinkler heads penetrating fire-resistance-rated floor/ceiling or roof/ceiling assemblies shall comply with CBC Section 714. Sprinkler heads and other penetrations shall have a 2 in. (50 mm) oversize ring, sleeve or adapter through the ceiling tile to allow for free movement of at least 1 in. (25 mm) in all horizontal directions. Alternatively, a swing joint that can accommodate 1 in. (25 mm) of ceiling movement in all horizontal directions is permitted to be provided at the top of the sprinkler head extension.

**1613.8.1.3 Special requirements for means of egress.** Suspended ceiling assemblies located along means of egress serving an occupant load of 30 or more shall comply with the following provisions:

**1613.8.1.3.1 General.** Ceiling suspension systems shall be connected and braced with vertical hangers attached directly to the structural floor or roof system above and along the means of egress serving an occupant load of 30 or more and at lobbies accessory to Group A Occupancies. Spacing of vertical hangers shall not exceed 2 feet (610 mm) on center along the entire length of the suspended ceiling assembly located along the means of egress or at the lobby.

**1613.8.1.3.2 Assembly device.** All lay-in panels shall be secured to the suspension ceiling assembly with a minimum of two hold-down clips for each tile within a 4 foot (1219 mm) radius of the exit lights and exit signs.

**1613.8.1.3.3 Emergency systems.** Independent supports and braces shall be provided for light fixtures required for exit illumination. Power supply for exit illumination shall comply with the requirements of CBC Section 1008.3.

**1613.8.1.3.4 Supports for appendage.** Separate support from the structural floor or roof system above shall be provided for all appendages such as light fixtures, air diffusers, exit signs and similar elements.

**1613.9 Seismic design provisions for hillside buildings.**

**1613.9.1 Purpose.** The purpose of this section is to establish minimum regulations for the design and construction of new buildings and additions to existing buildings when such buildings or additions exist on or into a slope steeper than 1 unit vertical in 3 units horizontal (33.3 percent). These regulations establish minimum standards for seismic force resistance to reduce the risk of injury or loss of life in the event of earthquakes.

**1613.9.2 Scope.** The provisions of this section shall apply to the design of the lateral-force-resisting system for hillside buildings at and below the base level diaphragm. The design of the lateral-force-resisting system above the base level diaphragm shall be in accordance with the provisions for seismic and wind design as required elsewhere in this chapter.

**Exception:** Nonhabitable accessory buildings and decks not supporting or supported from the main building are exempt from these regulations.

**1613.9.3 Definitions.** For the purpose of this chapter, certain terms are defined as follows:

**BASE LEVEL DIAPHRAGM.** The floor at, or closest to, the top of the highest level of the foundation.

**DIAPHRAGM ANCHORS.** Assemblies that connect a diaphragm to the adjacent foundation at the uphill diaphragm edge.

**DOWNHILL DIRECTION.** The descending direction of the slope approximately perpendicular to the slope contours.

**FOUNDATION.** Concrete or masonry, which supports a building, including footings, stem walls, retaining walls, and grade beams.

**FOUNDATION EXTENDING IN THE DOWNHILL DIRECTION.** A foundation running downhill and approximately perpendicular to the uphill foundation.

**HILLSIDE BUILDING.** Any building or portion thereof constructed on or into a slope steeper than one unit vertical in three units horizontal (33.3 percent). If only a portion of the building is supported on or into the slope, these regulations apply to the entire building.

**PRIMARY ANCHORS.** Diaphragm anchors designed for and providing a direct connection as described in Sections 1613.9.5 and 1613.9.7.3 between the diaphragm and the uphill foundation.



**SECONDARY ANCHORS.** Diaphragm anchors designed for and providing a redundant diaphragm to foundation connection, as describe in Sections 1613.9.6 and 1613.9.7.4.

**UPHILL DIAPHRAGM EDGE.** The edge of the diaphragm adjacent and closest to the highest ground level at the perimeter of the diaphragm.

**UPHILL FOUNDATION.** The foundation parallel and closest to the uphill diaphragm edge.

#### 1613.9.4 Analysis and design.

**1613.9.4.1 General.** Every hillside building within the scope of this chapter shall be analyzed, designed and constructed in accordance with provisions of this chapter. When the code-prescribed wind design produces greater effects, the wind design shall govern, but detailing requirements and limitations prescribed in this and referenced sections shall be followed.

**1613.9.4.2 Base level diaphragm—downhill direction.** The following provisions shall apply to the seismic analysis and design of the connections for the base level diaphragm in the downhill direction.

**1613.9.4.2.1 Base for lateral force design defined.** For seismic forces acting in the downhill direction, the base of the building shall be the floor at, or closest to, the top of the highest level of the foundation.

**1613.9.4.2.2 Base shear.** In developing the base shear for seismic design, the response modification coefficient ( $R$ ) shall not exceed 5 for bearing wall and building frame systems. The total base shear shall include the forces tributary to the base level diaphragm including forces from the base level diaphragm.

#### 1613.9.5 Base shear resistance—primary anchors.

**1613.9.5.1 General.** The base shear in the downhill direction shall be resisted through primary anchors from diaphragm struts provided in the base level diaphragm to the foundation.

**1613.9.5.2 Location of primary anchors.** A primary anchor and diaphragm strut shall be provided in line with each foundation extending in the downhill direction. Primary anchors and diaphragm struts shall also be provided where interior vertical lateral-force-resisting elements occur above and in contact with the base level diaphragm. The spacing of primary anchors and diaphragm struts or collectors shall in no case exceed 30 feet (9144 mm).

**1613.9.5.3 Design of primary anchors and diaphragm struts.** Primary anchors and diaphragm struts shall be designed in accordance with the requirements of Section 1613.9.8.

**1613.9.5.4 Limitations.** The following lateral-force-resisting elements shall not be designed to resist seismic forces below the base level diaphragm in the downhill direction:

1. Wood structural panel wall sheathing,

2. Cement plaster and lath,
3. Gypsum wallboard, and
4. Tension only braced frames.

Braced frames designed in accordance with the requirements of CBC Section 2205.2.1.2 may be used to transfer forces from the primary anchors and diaphragm struts to the foundation, provided lateral forces do not induce flexural stresses in any member of the frame or in the diaphragm struts. Deflections of frames shall account for the variation in slope of diagonal members when the frame is not rectangular.

#### 1613.9.6 Base shear resistance—secondary anchors.

**1613.9.6.1 General.** In addition to the primary anchors required by Section 1613.9.5, the base shear in the downhill direction shall be resisted through secondary anchors in the uphill foundation connected to diaphragm struts in the base level diaphragm.

**Exception:** Secondary anchors are not required where foundations extending in the downhill direction spaced at not more than 30 feet (9144 mm) on center extend up to and are directly connected to the base level diaphragm for at least 70 percent of the diaphragm depth.

**1613.9.6.2 Secondary anchor capacity and spacing.** Secondary anchors at the base level diaphragm shall be designed for a minimum force equal to the base shear, including forces tributary to the base level diaphragm, but not less than 600 pounds per lineal foot (8.76 kN/m). The secondary anchors shall be uniformly distributed along the uphill diaphragm edge and shall be spaced a maximum of 4 feet (1219 mm) on center.

**1613.9.6.3 Design.** Secondary anchors and diaphragm struts shall be designed in accordance with Section 1613.9.8.

**1613.9.7 Diaphragms below the base level—downhill direction.** The following provisions shall apply to the lateral analysis and design of the connections for all diaphragms below the base level diaphragm in the downhill direction.

**1613.9.7.1 Diaphragm defined.** Every floor level below the base level diaphragm shall be designed as a diaphragm.

**1613.9.7.2 Design force.** Each diaphragm below the base level diaphragm shall be designed for all tributary loads at that level using a minimum seismic force factor not less than the base shear coefficient.

**1613.9.7.3 Design force resistance—primary anchors.** The design force described in Section 1613.9.7.2 shall be resisted through primary anchors from diaphragm struts provided in each diaphragm to the foundation. Primary anchors shall be provided and designed in accordance with the requirements and limitations of Section 1613.9.5.

**1613.9.7.4 Design force resistance—secondary anchors.**

**1613.9.7.4.1 General.** In addition to the primary anchors required in Section 1613.9.5, the design force in the downhill direction shall be resisted through secondary anchors in the uphill foundation connected to diaphragm struts in each diaphragm below the base level.

**Exception:** Secondary anchors are not required where foundations extending in the downhill direction, spaced at not more than 30 feet (9144 mm) on center, extend up to and are directly connected to each diaphragm below the base level for at least 70 percent of the diaphragm depth.

**1613.9.7.4.2 Secondary anchor capacity.** Secondary anchors at each diaphragm below the base level diaphragm shall be designed for a minimum force equal to the design force but not less than 300 pounds per lineal foot (4.38 kN/m). The secondary anchors shall be uniformly distributed along the uphill diaphragm edge and shall be spaced a maximum of 4 feet (1219 mm) on center.

**1613.9.7.4.3 Design.** Secondary anchors and diaphragm struts shall be designed in accordance with Section 1613.9.8.

**1613.9.8 Primary and secondary anchorage and diaphragm strut design.** Primary and secondary anchors and diaphragm struts shall be designed in accordance with the following provisions:

1. **Fasteners.** All bolted fasteners used to develop connections to wood members shall be provided with square plate washers at all bolt heads and nuts. Washers shall be a minimum 0.229 inch by 3 inches by 3 inches (5.82 mm by 76 mm by 76 mm) in size. Nuts shall be tightened to finger tight plus one-half ( $\frac{1}{2}$ ) wrench turn prior to covering the framing.
2. **Fastening.** The diaphragm to foundation anchorage shall not be accomplished by the use of toenailing, nails subject to withdrawal, or wood in cross-grain bending or cross-grain tension.
3. **Size of Wood Members.** Wood diaphragm struts collectors, and other wood members connected to primary anchors shall not be less than 3 inches (76 mm) nominal width. The effects of eccentricity on wood members shall be evaluated as required per Subdivision 9.
4. **Design.** Primary and secondary anchorage, including diaphragm struts, splices, and collectors shall be designed for 125 percent of the tributary force.
5. **Allowable Stress Increase.** The allowable stress increase permitted under CBC Section 1605.3.2 shall not be taken when the working (allowable) stress design method is used.
6. **Steel Element of Structural Wall Anchorage System.** The strength design forces for steel elements of the structural wall anchorage system, with the exception of anchor bolts and reinforcing steel, shall be increased by 1.4 times the forces otherwise required.

7. **Primary Anchors.** The load path for primary anchors and diaphragm struts shall be fully developed into the diaphragm and into the foundation. The foundation must be shown to be adequate to resist the concentrated loads from the primary anchors.

8. **Secondary Anchors.** The load path for secondary anchors and diaphragm struts shall be fully developed in the diaphragm but need not be developed beyond the connection to the foundation.

9. **Symmetry.** All lateral force foundation anchorage and diaphragm strut connections shall be symmetrical. Eccentric connections may be permitted when demonstrated by calculation or tests that all components of force have been provided for in the structural analysis or tests.

10. **Wood Ledgers.** Wood ledgers shall not be used to resist cross-grain bending or cross-grain tension.

**1613.9.9 Lateral-force-resisting elements normal to the downhill direction.**

**1613.9.9.1 General.** In the direction normal to the downhill direction, lateral-force-resisting elements shall be designed in accordance with the requirements of this section.

**1613.9.9.2 Base shear.** In developing the base shear for seismic design, the response modification coefficient (R) shall not exceed 5 for bearing wall and building frame systems.

**1613.9.9.3 Vertical distribution of seismic forces.** For seismic forces acting normal to the downhill direction, the distribution of seismic forces over the height of the building using ASCE Section 12.8.3 shall be determined using the height measured from the top of the lowest level of the building foundation.

**1613.9.9.4 Drift limitations.** The story drift below the base level diaphragm shall not exceed 0.007 times the story height at strength design force level. The total drift from the base level diaphragm to the top of the foundation shall not exceed  $\frac{3}{4}$  inch (19 mm). Where the story height or the height from the base level diaphragm to the top of the foundation varies because of a stepped footing or story offset, the height shall be measured from the average height of the top of the foundation. The story drift shall not be reduced by the effect of horizontal diaphragm stiffness.

**1613.9.9.5 Distribution of lateral forces.**

**1613.9.9.5.1 General.** The design lateral force shall be distributed to lateral-force-resisting elements of varying heights in accordance with the stiffness of each individual element.

**1613.9.9.5.2 Wood structural panel sheathed walls.** The stiffness of a stepped wood structural panel shear wall may be determined by dividing the wall into adjacent rectangular elements, subject to the same top of wall deflection. Deflections of shear walls may be estimated by AWC SDPWS Section 4.3.2. Sheathing and fastening require-

ments for the stiffest section shall be used for the entire wall. Each section of wall shall be anchored for shear and uplift at each step. The minimum horizontal length of a step shall be 8 feet (2438 mm) and the maximum vertical height of a step shall be 2 feet, 8 inches (813 mm).

**1613.9.9.5.3 Reinforced concrete or masonry shear walls.** Reinforced concrete or masonry shear walls shall have forces distributed in proportion to the rigidity of each section of the wall.

**1613.9.9.6 Limitations.** The following lateral-force-resisting elements shall not be designed to resist lateral forces below the base level diaphragm in the direction normal to the downhill direction:

1. Cement plaster and lath.
2. Gypsum wallboard.
3. Tension-only braced frames.

Braced frames designed in accordance with the requirements of CBC Section 2205.2.1.2 may be designed as lateral-force-resisting elements in the direction normal to the downhill direction, provided lateral forces do not induce flexural stresses in any member of the frame. Deflections of frames shall account for the variation in slope of diagonal members when the frame is not rectangular.

#### 1613.9.10 Specific design provisions.

**1613.9.10.1 Footings and grade beams.** All footings and grade beams shall comply with the following:

1. Grade beams shall extend at least 12 inches (305 mm) below the lowest adjacent grade and provide a minimum 24-inch (610 mm) distance horizontally from the bottom outside face of the grade beam to the face of the descending slope.
2. Continuous footings shall be reinforced with at least two No. 4 reinforcing bars at the top and two No. 4 reinforcing bars at the bottom.
3. All main footing and grade beam reinforcement steel shall be bent into the intersecting footing and fully developed around each corner and intersection.
4. All concrete stem walls shall extend from the foundation and reinforced as required for concrete or masonry walls.

**1613.9.10.2 Protection against decay and termites.** All wood to earth separation shall comply with the following:

1. Where a footing or grade beam extends across a descending slope, the stem wall, grade beam, or footing shall extend up to a minimum 18 inches (457 mm) above the highest adjacent grade.

**Exception:** At paved garage and doorway entrances to the building, the stem wall need only extend to the finished concrete slab, provided the wood framing is protected with a moisture-proof barrier.

2. Wood ledgers supporting a vertical load of more than 100 pounds per lineal foot (1.46 kN/m) and located within 48 inches (1219 mm) of adjacent grade are prohibited. Galvanized steel ledgers and anchor bolts, with or without wood nailers, or treated or decay resistant sill plates supported on a concrete or masonry seat, may be used.

**1613.9.10.3 Sill plates.** All sill plates and anchorage shall comply with the following:

1. All wood framed walls, including nonbearing walls, when resting on a footing, foundation, or grade beam stem wall, shall be supported on wood sill plates bearing on a level surface.
2. Power-driven fasteners shall not be used to anchor sill plates except at interior nonbearing walls not designed as shear walls.

**1613.9.10.4 Column base plate anchorage.** The base of isolated wood posts (not framed into a stud wall) supporting a vertical load of 4,000 pounds (17.8 kN) or more and the base plate for a steel column shall comply with the following:

1. When the post or column is supported on a pedestal extending above the top of a footing or grade beam, the pedestal shall be designed and reinforced as required for concrete or masonry columns. The pedestal shall be reinforced with a minimum of four No. 4 bars extending to the bottom of the footing or grade beam. The top of exterior pedestals shall be sloped for positive drainage.
2. The base plate anchor bolts or the embedded portion of the post base, and the vertical reinforcing bars for the pedestal, shall be confined with two No. 4 or three No. 3 ties within the top 5 inches (127 mm) of the concrete or masonry pedestal. The base plate anchor bolts shall be embedded a minimum of 20-bolt diameters into the concrete or masonry pedestal. The base plate anchor bolts and post bases shall be galvanized and each anchor bolt shall have at least two galvanized nuts above the base plate.

**1613.9.10.5 Steel beam to column supports.** All steel beam to column supports shall be positively braced in each direction. Steel beams shall have stiffener plates installed on each side of the beam web at the column. The stiffener plates shall be welded to each beam flange and the beam web. Each brace connection or structural member shall consist of at least two  $\frac{5}{8}$  inch (15.9 mm) diameter machine bolts.

#### 1613.10 Earthquake recording instrumentation.

**1613.10.1. Applicability.** The requirements of this section shall apply to buildings for which permits were issued after July 1, 1965.

**1613.10.2 General.** Every new building over six stories in height with an aggregate floor area of 60,000 square feet (5574 m<sup>2</sup>) or more and every new building over ten stories

in height regardless of the floor area shall be equipped with at least three approved recording accelerographs.

**Exceptions:**

1. A building selected by the State of California as part of its Strong Motion Instrumentation Program (California Public Resources Code Section 2700 *et seq.*) need not comply with this section until it ceases to be part of the program.
2. All new buildings that are designed using the nonlinear response history procedure of “Seismic Response History Procedures” of Chapter 16 of ASCE 7 shall be equipped with a structural monitoring system in accordance with standards established by the Superintendent of Building.
3. A building designed using a two-stage analysis procedure per Section 12.2.3.2 of ASCE 7 having a flexible upper portion above a rigid lower portion and a total building height not exceeding 85 feet (25.9 m) above the grade plane.

**1613.10.3 Maintenance.** Maintenance and service of the instruments shall be provided by the owner of the building subject to the approval of the Superintendent of Building. Data produced by the instruments shall be made available to the Superintendent of Building on request.

Maintenance and service of the instruments shall be performed annually and shall be performed only by an approved testing agency. The owner shall file with the Department a written report from an approved testing agency certifying that each instrument has been serviced and is in proper working condition. This report shall be submitted when the instruments are installed and annually thereafter. Each instrument shall have affixed to it an externally visible tag specifying the date of the last maintenance or service and the printed name and address of the testing agency performing the service.

**1613.10.4 Location.** For new buildings requiring accelerographs in accordance with Section 1613.10.2, the instruments shall be located in the basement, mid-height and near the top of the building. Each instrument shall be located so that access is maintained at all times and is unobstructed by room contents. A sign stating “MAINTAIN CLEAR ACCESS TO THIS INSTRUMENT” in 1 inch (25.4 mm) block letters shall be posed in a conspicuous location at the instrument.

**1613.10.5 Instrumentation of existing buildings.** All owners of existing structures selected by the Department shall provide accessible space for the installation of appropriate earthquake-recording instruments. Locations of the instruments shall be determined by the engineer of record and approved by the Department. The owners shall make arrangements with the Department to provide, maintain and service the instruments as required above. Data shall be the property of the Department, but copies of individual records shall be made available to the public on request with the payment of an appropriate fee.

All legally existing instruments shall be maintained and serviced in proper working condition. Each instrument shall

be maintained and serviced as specified by Section 1613.10.3 and shall be provided with a sign as required by Section 1613.10.4.

## SECTION 1614 ATMOSPHERIC ICE LOADS

**1614.1 General.** Ice-sensitive structures shall be designed for atmospheric ice loads in accordance with Chapter 10 of ASCE 7.

## SECTION 1615 TSUNAMI LOADS

**1615.1 General.** The design and construction of *Risk Category* III and IV buildings and structures located in the *Tsunami Design Zones* defined in the *Tsunami Design Geodatabase* shall be in accordance with Chapter 6 of ASCE 7, except as modified by this code.

## SECTION 1616 STRUCTURAL INTEGRITY

**1616.1 General.** High-rise buildings that are assigned to *Risk Category* III or IV shall comply with the requirements of Section 1616.2 if they are frame structures, or Section 1616.3 if they are bearing wall structures.

**1616.2 Frame structures.** Frame structures shall comply with the requirements of this section.

**1616.2.1 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 Section 4.10 of ACI 318. 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 reinforcement 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.

**1616.2.2 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.

**1616.2.2.1 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.

**1616.2.2.2 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).

**1616.3 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 1616.3.

**1616.3.1 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 16.2.4 and 16.2.5 of ACI 318.

**1616.3.2 Other bearing wall structures.** Ties in bearing wall structures other than those covered in Section 1616.3.1 shall conform to this section.

**1616.3.2.1 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 16-24. 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.

$$T_T = w LS \leq \alpha_T S \quad \text{(Equation 16-24)}$$

where:

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

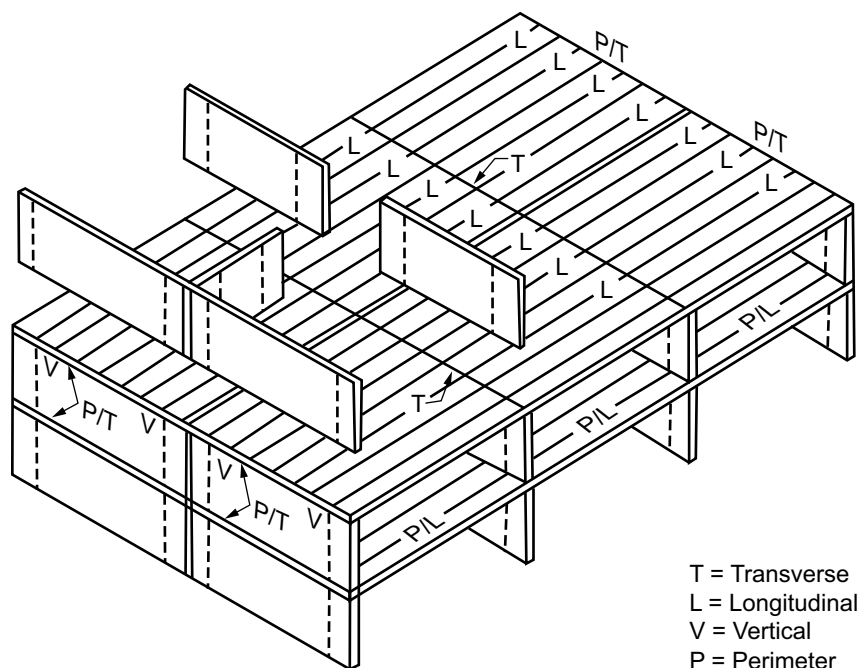


FIGURE 1616.3  
LONGITUDINAL, PERIMETER, TRANSVERSE AND VERTICAL TIES

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

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

$\alpha_T$  = 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.

**1616.3.2.2 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 not farther apart than the spacing of load-bearing walls. Transverse ties shall have minimum nominal tensile strength  $T_T$ , given by Equation 16-24. 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.

**1616.3.2.3 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 16-25. 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.

$$T_p = 200w \leq \beta_T \quad \text{(Equation 16-25)}$$

$$\text{For SI: } T_p = 90.7w \leq \beta_T$$

where:

$w$  = As defined in Section 1616.3.2.1.

$\beta_T$  = 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.

**1616.3.2.4 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. Not 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.

## SECTION 1617 ADDITIONAL REQUIREMENTS FOR COMMUNITY COLLEGES [DSA-SS/CC]

### 1617.1 Construction documents.

**1617.1.1 Additional requirements for construction documents.** Additional requirements for construction documents are included in Sections 4-210 and 4-317 of the California Administrative Code (Part 1, Title 24, C.C.R.).

**1617.1.2 Connections.** Connections that resist design seismic forces shall be designed and detailed on the design drawings.

**1617.1.3 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 construction, such procedure shall be indicated on the plans or in the specifications.

### 1617.2 General design requirements.

#### 1617.2.1 Lateral load deflections.

**1617.2.1.1 Horizontal diaphragms.** The maximum span-depth ratio for any roof or floor diaphragm consisting of steel and composite steel slab decking or concrete shall be based on test data and design calculations acceptable to the enforcement agency.

**1617.2.1.2 Veneers.** The deflection shall not exceed  $l/600$  for veneered walls, anchored veneers and adhered veneers over 1 inch (25 mm) thick, including the mortar backing.

**1617.2.1.3 Risk Category of buildings and other structures.** Risk Category IV includes structures as defined in the California Administrative Code, Section 4-207 and all structures required for their continuous operation or access/egress.

**1617.2.1.4 Analysis.** Structural analysis shall explicitly include consideration of stiffness of diaphragm in accordance with ASCE 7, Section 12.3.1. A diaphragm is rigid for the purpose of distribution of story shear and torsional moment where so indicated in Section 12.3.1 of ASCE 7.

**1617.2.2 Structural walls.** For anchorage of concrete or masonry walls to roof and floor diaphragms, the out-of-plane strength design force shall not be less than 280 lb/linear ft (4.09 kN/m) of wall.

### 1617.3 Load combinations.

**1617.3.1 Stability.** When checking stability under the provisions of Section 1605.1.1 using allowable stress design, the factor of safety for soil bearing values shall not be less than the overstrength factor of the structures supported. Strength design for foundation geotechnical capacity shall be in accordance with ASCE 7, Section 12.13.5 for all strength design load combinations, except that Resistance Factor ( $\phi$ ) shall be permitted to be 1.0 for load combinations with overstrength factor. Allowable stress design for foundation geotechnical capacity shall be in accordance with ASCE 7, Section 12.13.6 for all allowable stress design load combinations, and shall be established to be

consistent with strength design requirements in ASCE 7, Section 12.13.5.

**1617.3.2 Alternative allowable stress design load combinations.** Where the alternative allowable stress design load combinations of Section 1605.2 are used, each load combination shall be investigated with one or more of the variable loads set to zero.

**1617.3.3 Modifications to load combinations in ICC 300.** Modify the text of ICC 300 as follows:

**1617.3.3.1 ICC 300, Section 303.5.2.** Modify Section 303.5.2 by adding Equation 3-5a as follows:

$$D + 0.4L + Z \quad \text{(Equation 3-5a)}$$

**1617.3.3.2 ICC 300, Section 303.5.3.** Modify Section 303.5.3 as follows:

The uniform live load,  $L$ , used in Equation 3-2 and 3-4 may be taken as zero when evaluating elements supporting the handrail/guardrail provided those elements do not also support  $L$ .

**1617.4 Roof dead loads.** The design dead load shall provide for the weight of at least one additional roof covering in addition to other applicable loadings if the new roof covering is permitted to be applied over the original roofing without its removal, in accordance with Section 1512.

#### **1617.5 Live loads.**

##### **1617.5.1 Modifications to Table 1607.1.**

**1617.5.1.1 Item 4. Assembly areas.** The following minimum loads for stage accessories apply:

1. Gridirons and fly galleries: 75 pounds per square foot uniform live load.
2. Loft block wells: 250 pounds per lineal foot vertical load and lateral load.
3. Head block wells and sheave beams: 250 pounds per lineal foot vertical load and lateral load. Head block wells and sheave beams shall be designed for all tributary loft block well loads. Sheave blocks shall be designed with a safety factor of five.
4. Scenery beams where there is no gridiron: 300 pounds per lineal foot vertical load and lateral load.
5. Ceiling framing over stages shall be designed for a uniform live load of 20 pounds per square foot. For members supporting a tributary area of 200 square feet or more, this additional load may be reduced to 15 pounds per square foot ( $0.72 \text{ kN/m}^2$ ).

##### **1617.5.1.2 Reserved.**

**1617.5.1.3 Item 4. Bleachers, folding and telescopic seating and grandstands.** The minimum uniform live load for a press box floor or accessible roof with railing is 100 psf.

**1617.5.1.4 Item 37. Yards and terraces, pedestrians.** Item 37 applies to pedestrian bridges and walkways that are not subjected to uncontrolled vehicle access.

**1617.5.1.5 Item 38. Storage racks and wall-hung cabinets.** The minimum vertical design live load shall be as follows:

Paper media:

12-inch-deep (305 mm) shelf - 33 pounds per lineal foot (482 N/m)

15-inch-deep (381 mm) shelf - 41 pounds per lineal foot (598 N/m), or 33 pounds per cubic foot ( $5183 \text{ N/m}^3$ ) per total volume of the rack or cabinet, whichever is less.

Film media:

18-inch-deep (457 mm) shelf - 100 pounds per lineal foot (1459 N/m), or

50 pounds per cubic foot ( $7853 \text{ N/m}^3$ ) per total volume of the rack or cabinet, whichever is less.

Other media:

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

**1617.5.2 Uncovered open-frame roof structures.** Uncovered open-frame roof structures shall be designed for a vertical live load of not less than 10 pounds per square foot ( $0.48 \text{ kN/m}^2$ ) of the total area encompassed by the framework.

**1617.5.3 Seating for assembly uses.** Replace Section 1607.19 with the following:

Bleachers, folding and telescopic seating and grandstands shall be designed for the loads specified in ICC 300 as modified by Section 1617.3.3 load combinations. Stadiums and arenas with fixed seats shall be designed for the horizontal sway loads in Section 1607.19.1.

**1617.6 Determination of snow loads.** The ground snow load or the design snow load for roofs shall conform with the adopted ordinance of the city, county, or city and county in which the project site is located, and shall be approved by DSA. See Section 106.1.2 for snow load posting requirements.

#### **1617.7 Wind loads.**

**1617.7.1 Story drift for wind loads.** The calculated story drift due to wind pressures with ultimate design wind speed,  $V_{ult}$ , shall not exceed 0.008 times the story height for buildings less than 65 feet (19 812 mm) in height or 0.007 times the story height for buildings 65 feet (19 812 mm) or greater in height.

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

**1617.8 Establishment of flood hazard areas.** Flood hazard maps shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency's Flood Insurance Study (FIS) adopted by the local authority having jurisdiction where the project is located, as amended or revised with the accompanying Flood Insurance Rate Map (FIRM) and Flood Boundary and Floodway Map

(FBFM) and related supporting data along with any revisions thereto.

**1617.9 Earthquake loads.**

**1617.9.1 Modifications to Table 1613.2.3(1).** Replace Table 1613.2.3(1) with Table 1613A.2.3(1).

**1617.9.2 Modifications to Table 1613.2.3(2).** Replace Table 1613.2.3(2) with Table 1613A.2.3(2).

**1617.9.3 Seismic design category.** The seismic design category for a structure shall be determined in accordance with Section 1613.

**1617.9.4 Mapped acceleration parameters.** Seismic Design Category shall be determined in accordance with Section 1613.2.5.

**1617.9.5 Determination of seismic design category.** Structures not assigned to Seismic Design Category E or F, in accordance with Section 1613.2, shall be assigned to Seismic Design Category D.

**1617.9.5.1 Alternative seismic design category determination.** The alternative Seismic Design Category determination procedure of Section 1613.2.5.1 is not permitted by DSA-SS/CC.

**1617.9.5.2 Simplified design procedure.** The simplified design procedure of Section 1613.2.5.2 is not permitted by DSA-SS/CC.

**1617.9.6 Ballasted photovoltaic panel systems.** Ballasted, roof-mounted photovoltaic panel systems shall comply with ASCE 7, Section 13.6.12.

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

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

**1617.11.1 ASCE 7, Section 1.3.** Modify ASCE 7, Section 1.3 by adding Section 1.3.8 as follows:

**1.3.8 Structural design criteria.** Where design is based on ASCE 7, Chapters 16, 17, 18 or 31, the ground motion, wind tunnel design recommendations, analysis and design methods, material assumptions, testing requirements and acceptance criteria proposed by the engineer shall be submitted to the

enforcement agency in the form of structural design criteria for approval.

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

**1617.11.2 ASCE 7, Section 11.4.** Modify ASCE 7, Section 11.4 to include the following:

Seismic ground motion values shall include updated subsections in Supplement 3.

**1617.11.3 ASCE 7, Table 12.2-1.** Modify ASCE 7, Table 12.2-1 as follows:

**A. BEARING WALL SYSTEMS**

17. Light-framed walls with shear panels of all other materials—*Not permitted by DSA-SS/CC.*

**B. BUILDING FRAME SYSTEMS**

24. Light-framed walls with shear panels of all other materials—*Not permitted by DSA-SS/CC.*

**C. MOMENT RESISTING FRAME SYSTEMS**

12. Cold-formed steel — special bolted moment frame—*Not permitted by DSA-SS/CC.*

**Exceptions:**

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

**1617.11.4 ASCE 7, Sections 12.2.3, 12.2.3.1 and 12.2.3.2.** Modify ASCE 7, Sections 12.2.3, 12.2.3.1 and 12.2.3.2 as follows:

**1617.11.4.1 ASCE 7, Section 12.2.3.** Replace ASCE 7, Section 12.2.3 with the following:

Where different seismic force-resisting systems are used in combinations to resist seismic forces in the same direction, other than those combinations considered as dual systems, the design shall comply with the requirements of this section. The most stringent applicable structural system limitations contained in Table 12.2-1 shall apply, except as otherwise permitted by this section.

**1617.11.4.2 ASCE 7, Section 12.2.3.1.** Replace ASCE 7, Section 12.2.3.1, Items 1 and 2 by the following:

The value of the response modification coefficient,  $R$ , used for design at any story shall not exceed the lowest value of  $R$  that is used in the same direction at any story above that story. Likewise, the deflection amplification factor,  $C_d$ , and the system over strength factor,



$\Omega_p$ , used for the design at any story shall not be less than the largest value of these factors that are used in the same direction at any story above that story.

**1617.11.4.3 ASCE 7, Section 12.2.3.2.** Modify ASCE 7, Section 12.2.3.2 by modifying Item a and adding Items f, g and h, as follows:

- a. The stiffness of the lower portion shall be at least 10 times the stiffness of the upper portion. For purposes of determining this ratio, the base shear shall be computed and distributed vertically according to Section 12.8. Using these forces, the stiffness for each portion shall be computed as the ratio of the base shear for that portion to the elastic displacement,  $\delta_{xe}$ , computed at the top of that portion, considering the portion fixed at its base. For the lower portion, the applied forces shall include the reactions from the upper portion, modified as required in Item d.
- f. The structural height of the upper portion shall not exceed the height limits of Table 12.2-1 for the seismic force-resisting system used, where the height is measured from the base of the upper portion.
- g. Where Horizontal Irregularity Type 4 or Vertical Irregularity Type 4 exists at the transition from the upper to the lower portion, the reactions from the upper portion shall be amplified in accordance with Sections 12.3.3.3, 12.10.1.1 and 12.10.3.3 as applicable, in addition to amplification required by Item d.
- h. Where design of vertical elements of the upper portion is governed by special seismic load combinations, the special loads shall be considered in the design of the lower portions.

**1617.11.5 Reserved.**

**1617.11.6 ASCE 7, Section 12.2.5.6.1.** The exception in Item a is not permitted by DSA-SS/CC.

**1617.11.7 ASCE 7, Section 12.2.5.7.1.** The exception in Item a is not permitted by DSA-SS/CC.

**1617.11.8 ASCE 7, Section 12.2.5.7.2.** The exception in Item a is not permitted by DSA-SS/CC.

**1617.11.9 ASCE 7, Section 12.3.3.1.** Modify 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 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. Structures assigned to Seismic Design Category D having vertical irregularity Type 1b or 5b of Table 12.3-2 shall not be permitted.

**Exceptions:**

1. Structures with reinforced concrete or reinforced masonry shear wall systems and rigid or semi-rigid diaphragms, consisting of con-

crete slabs or concrete-filled metal deck having a span-to-depth ratio of 3 or less, having a horizontal structural irregularity Type 1b of Table 12.3-1 are permitted, provided that the maximum story drift in the direction of the irregularity, computed including the torsional amplification factor from Section 12.8.4.3, is less than 10 percent of the allowable story drift in ASCE 7, Table 12.12-1.

2. Structures having a horizontal structural irregularity Type 1b of Table 12.3-1 are permitted, provided a redundancy factor,  $p$ , of 1.3 as defined in ASCE 7, Section 12.3.4 is assigned to the seismic force-resisting system in both orthogonal directions and the structure is designed for one of the orthogonal procedures as defined in ASCE 7, Section 12.5.3.1.

**1617.11.10 ASCE 7, Section 12.7.2.** Modify ASCE 7, Section 12.7.2 by adding Item 6 to read as follows:

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

**1617.11.11 Reserved.**

**1617.11.12 Reserved.**

**1617.11.13 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 1605.1.1.

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 can be delivered to the foundation in a fully yielded structural system.
3. Forces from the Load Combinations with over-strength factor in accordance with ASCE 7, Section 12.4.3.1.

**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 seismic force-resisting system consists of light-framed walls with shear panels, unless the reference standard specifies the use of higher design loads.

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.

**1617.11.14 ASCE 7, Section 12.13.9.2.** Modify ASCE 7, Section 12.13.9.2 by the following sentence added to the end of Item b as follows:

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

**1617.11.15 ASCE 7, Section 13.1.4.** Replace ASCE 7, Section 13.1.4 by the following:

**13.1.4** The following nonstructural components and equipment shall be anchored in accordance with this section. Design and detailing shall be in accordance with Chapter 13 except as modified by this section.

1. **Fixed Equipment:** Equipment shall be anchored if it is directly attached to the building utility services such as electricity, gas or water. For the purposes of this requirement, "directly attached" shall include all electrical connections except plugs for 110/220-volt receptacles having a flexible cable/cord. Equipment that is connected to the building plumbing system with a shut-off valve in proximity to the equipment shall not be considered as directly attached provided the inside diameter of the pipe/tubing is less than ½ inch (12.7 mm).
2. **Movable Equipment:** Equipment is subject to the same requirement as fixed equipment, but is permitted to be anchored by re-attachable anchors or restraints in a manner approved by the enforcement agency. Utilities and services at the equipment shall have flexible connections to allow for necessary movement.
3. **Mobile Equipment:** Equipment heavier than 400 pounds (181.4 kg) or that has a center of mass located 4 feet (1219 mm) or more above the adjacent floor or roof level that directly supports the equipment shall be restrained in a manner approved by the enforcement agency. Mobile equipment shall be restrained when not in use and is stored, unless the equipment is stored in a

storage room that does not house hazardous materials or any facility systems or fixed equipment that can be affected by mobile equipment lacking restraint.

4. **Countertop Equipment:** Countertop equipment shall be subject to the same anchorage or restraint requirements for fixed or movable equipment, as applicable. Countertop equipment shall also be subject to the same requirements as mobile or other equipment if weight of equipment is greater than 100 pounds (45 kg) and has a center of mass located 4 feet (1219 mm) or more above the adjacent floor level or if equipment could fall and block a required means of egress.
5. **Other Equipment:** Equipment shall be anchored where any of the following apply:
  - a. Weight of equipment is greater than 100 pounds (45 kg) and essential to operations for emergency preparedness, communications and operations centers and other facilities required for emergency response of state-owned essential services buildings as defined in the California Administrative Code (Title 24, Part 1, CCR) Section 4-207 and all structures required for their continuous operation or access/egress.
  - b. Could fall and block a required means of egress.
  - c. Weight of equipment is greater than 400 pounds (181.4 kg) or center of mass is located greater than 4 feet (1219 mm) above the finished floor or roof level that directly supports the component.
6. Equipment with hazardous contents.
7. Other architectural, mechanical and electrical components stated in Chapter 13.
8. **Wall-, Roof- or Floor-Hung Equipment:** Seismic design and seismic details shall be provided for wall-, roof- or floor-hung nonstructural components and equipment when the component weighs more than 20 pounds (9 kg).

**Exemptions:** The following nonstructural components are exempt from the requirements of ASCE 7, Chapter 13:

1. Furniture except storage cabinets as noted in Table 13.5-1.
2. Discrete architectural, mechanical and electrical components and fixed equipment that are positively attached to the structure, provided that none of the conditions in this section apply, and flexible connections are provided between the component and associated ductwork, piping and conduit where required.

**1617.11.16 ASCE 7, Section 13.5.6.2.** Modify ASCE 7, Section 13.5.6.2 by the following exception added to the end of Section 13.5.6.2.2 and by adding Section 13.5.6.2.3 as follows:

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

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

1. **Exitways.** Lay-in ceiling assemblies in exitways of hospitals and essential services buildings shall be installed with a main runner or cross runner surrounding all sides of each piece of tile, board or panel and each light fixture or grille. A cross runner that supports another cross runner shall be considered as a main runner for the purpose of structural classification. Splices or intersections of such runners shall be attached with through connectors such as pop rivets, screws, pins, plates with end tabs or other approved connectors. Lateral force diagonal bracing may be omitted in the short or transverse direction of exitways, not exceeding 8 feet wide, when perimeter support in accordance with ASTM E580 Sections 5.2.2 and 5.2.3 is provided and the perimeter wall laterally supporting the ceiling in the short or transverse direction is designed to carry the ceiling lateral forces. The connections between the ceiling grid, wall angle and the wall shall be designed to resist the ceiling lateral forces.
2. **Corridors and lobbies.** Expansion joints shall be provided in the ceiling at intersections of corridors and at junctions of corridors and lobbies or other similar areas.
3. **Lay-in panels.** Metal panels and panels weighing more than  $1/2$  pounds per square foot ( $24 \text{ N/m}^2$ ) other than acoustical tiles shall be positively attached to the ceiling suspension runners.
4. **Lateral force bracing.** Lateral force bracing is required for all ceiling areas except that they shall be permitted to be omitted in rooms with floor areas up to 144 square feet when perimeter support in accordance with ASTM E580 Sections 5.2.2 and 5.2.3 are provided and perimeter walls are designed to carry the ceiling lateral forces. The connections between the ceiling grid, wall angle and the wall shall be designed to resist the ceiling lateral forces. Horizontal restraint point spacing shall be justified by analysis or test and shall not exceed a spacing of 12 feet by 12 feet. Bracing wires shall be secured with four tight twists in  $1\frac{1}{2}$  inches, or an approved alternate connection.
5. Ceiling support and bracing wires shall be spaced a minimum of 6 inches from all pipes, ducts, conduits and equipment that are not

braced for horizontal forces, unless approved otherwise by the building official.

**1617.11.17 ASCE 7, Section 13.6.5.** Replace ASCE 7, Section 13.6.5 as follows:

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

**Exceptions:**

1. Design for the seismic forces and relative displacements of Section 13.3 shall not be required for raceways where flexible connections or other assemblies are provided between the cable tray or raceway and associated components to accommodate the relative displacement, where the cable tray or raceway is positively attached to the structure, and where one of the following apply:
  - a. Trapeze assemblies with  $3/8$ -inch (10 mm) or  $1/2$ -inch (13 mm) diameter rod hangers not exceeding 12 inches (305 mm) in length from the conduit, cable tray, or raceway support point to the connection at the supporting structure are used to support the cable tray or raceway, and the total weight supported by any single trapeze is 100 pounds (445 N) or less; or
  - b. The conduit, cable tray or raceway is supported by individual rod hangers  $3/8$  inch (10 mm) or  $1/2$  inch (13 mm) in diameter, and each hanger in the raceway run is 12 inches (305 mm) or less in length from the conduit, cable tray or raceway support point connection to the supporting structure, and the total weight supported by any single rod is 50 pounds (220 N) or less.
2. Design for the seismic forces and relative displacements of Section 13.3 shall not be required for conduit, regardless of the value of  $I_p$ , where the conduit is less than 2.5 inches (64 mm) trade size.

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

**1617.11.18 ASCE 7, Section 13.6.6.** Replace ASCE 7, Section 13.6.6 with the following:

**13.6.6 Distribution Systems: Duct Systems.** HVACR and other duct systems shall be designed for seismic

forces and seismic relative displacements as required in Section 13.3.

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

1. Design for the seismic forces and relative displacements of Section 13.3 shall not be required for duct systems where flexible connections or other assemblies are provided to accommodate the relative displacement between the duct system and associated components, the duct system is positively attached to the structure, and where one of the following apply:
  - a. Trapeze assemblies with  $\frac{3}{8}$ -inch (10 mm) or  $\frac{1}{2}$ -inch (13 mm) diameter rod hangers not exceeding 12 inches (305 mm) in length from the duct support point to the connection at the supporting structure are used to support duct, and the total weight supported by any single trapeze is less than 10 lb/ft (146 N/m) and 100 pounds or less; or
  - b. The duct is supported by individual rod hangers  $\frac{3}{8}$  inch (10 mm) or  $\frac{1}{2}$  inch (13 mm) in diameter, and each hanger in the duct run is 12 inches (305 mm) or less in length from the duct support point to the connection at the supporting structure, and the total weight supported by any single rod is 50 pounds (220 N) or less.
2. Design for the seismic forces and relative displacements of Section 13.3 shall not be required where provisions are made to avoid impact with other ducts or mechanical components or to protect the ducts in the event of such impact, the distribution system is positively attached to the structure; and HVACR ducts have a cross-sectional area of less than 6 square feet (0.557 m<sup>2</sup>) and weigh 20 lb/ft (292 N/m) or less.

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

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

**13.6.7.3 Additional provisions for piping and tubing systems.**

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

1. Trapeze assemblies are supported by  $\frac{3}{8}$ -inch (10 mm) or  $\frac{1}{2}$ -inch (13-mm) diameter rod hangers not exceeding 12 inches (305 mm) in length from the pipe support point to the connection at the supporting structure, and no single pipe exceeds the diameter limits set forth in item 2b or 2 inches (50 mm) where  $I_p$  is greater than 1.0 and the total weight supported by any single trapeze is 100 pounds (445 N) or less; or
2. Piping that has an  $R_p$  in Table 13.6-1 of 4.5 or greater is either supported by rod hangers and provisions are made to avoid impact with other structural or nonstructural components or to protect the piping in the event of such impact, or pipes with  $I_p = 1.0$  are supported by individual rod hangers  $\frac{3}{8}$  inch (10 mm) or  $\frac{1}{2}$  inch (13 mm) in diameter, where each hanger in the pipe run is 12 inches (305 mm) or less in length from the pipe support point to the connection at the supporting structure; and the total weight supported by any single hanger is 50 pounds (220 N) or less. In addition, the following limitations on the size of piping shall be observed:
  - a. In structures assigned to Seismic Design Category D, E or F where  $I_p$  is greater than 1.0, the nominal pipe size shall be 1 inch (25 mm) or less.
  - b. In structures assigned to Seismic Design Category D, E or F where  $I_p = 1.0$ , the nominal pipe size shall be 3 inches (80 mm) or less.
3. Pneumatic tube systems supported with trapeze assemblies using  $\frac{3}{8}$ -inch (10 mm) diameter rod hangers not exceeding 12 inches (305 mm) in length from the tube support point to the connection at the supporting structure and the total weight supported by any single trapeze is 100 pounds (445 N) or less.

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

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

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

**1617.11.20 ASCE 7, Section 13.6.11.1.** Modify ASCE 7, Section 13.6.11.1 by adding Section 13.6.11.1.1, as follows:

**13.6.11.1.1 Elevators guide rail support.** The design of guide rail support bracket fastenings and the supporting structural framing shall use the weight of the counterweight or maximum weight of the car plus not more than 40 percent of its rated load. The seismic forces shall be assumed to be distributed one-third to the top guiding members and two-thirds to the bottom guiding members of cars and counterweights, unless other substantiating data are provided. In addition to the requirements of ASCE 7, Section 13.6.11.1, the minimum seismic forces shall be 0.5g allowable stress design load acting in any horizontal direction.

**1617.11.21 ASCE 7, Section 13.6.11.4.** Replace ASCE 7, Section 13.6.11.4, as follows:

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

1. The seismic force shall be computed per the requirements of ASCE 7, Section 13.6.11.1. The minimum horizontal acceleration shall be 0.5g allowable stress design load for all buildings.
2.  $W_p$  shall equal the weight of the counterweight or the maximum weight of the car plus not less than 40 percent of its rated load.
3. With the car or counterweight located in the most adverse position, the stress in the rail shall not exceed the limitations specified in these regulations, nor shall the deflection of the rail relative to its supports exceed the deflection listed below.

RAIL SIZE (weight per foot of length, pounds)	WIDTH OF MACHINED SURFACE (inches)	ALLOWABLE RAIL DEFLECTION (inches)
8	$1\frac{1}{4}$	0.20
11	$1\frac{1}{2}$	0.30
12	$1\frac{3}{4}$	0.40
15	$1\frac{31}{32}$	0.50
$18\frac{1}{2}$	$1\frac{31}{32}$	0.50
$22\frac{1}{2}$	2	0.50
30	$2\frac{1}{4}$	0.50

For SI: 1 inch = 25 mm, 1 foot = 305 mm, 1 pound = 0.454 kg.

Note: Deflection limitations are given to maintain a consistent factor of safety against disengagement of retainer plates from the guide rails during an earthquake.

4. Where guide rails are continuous over supports and rail joints are within 2 feet (610 mm) of their supporting brackets, a simple span may be assumed.
5. The use of spreader brackets is allowed.
6. Cab stabilizers and counterweight frames shall be designed to withstand computed lateral load with a minimum horizontal acceleration of 0.5g allowable stress design load.

**1617.11.22 Reserved.**

**1617.11.23 Reserved.**

**1617.11.24 ASCE 7, Section 17.2.4.7.** Modify ASCE 7, Section 17.2.4.7 by adding the following to the end of the section:

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



## CHAPTER 17

# SPECIAL INSPECTIONS AND TESTS

### User notes:

**About this chapter:** Chapter 17 provides a variety of procedures and criteria for testing materials and assemblies, and labeling materials and assemblies. Its key purposes are to establish where additional inspections/observations and testing must be provided, and the submittals and verifications that must be provided to the building official. This chapter expands on the inspections of Chapter 1 by requiring special inspection by a qualified individual where indicated and, in some cases, structural observation by a registered design professional. Quality assurance measures that verify proper assembly of structural components and the suitability of the installed materials are intended to provide a building that, once constructed, complies with the minimum structural and fire-resistance code requirements as well as the approved design. To determine this compliance often requires frequent inspections and testing at specific stages of construction.

**Code development reminder:** Code change proposals to sections preceded by the designation [BF] will be considered by the IBC—Fire Safety Code Development Committee during the 2021 (Group A) Code Development Cycle. Sections preceded by the designation [F] will be considered by the International Fire Code Development Committee during the 2021 (Group A) Code Development Cycle. All other code change proposals will be considered by the IBC—Structural Code Development Committee during the Group B cycle.

### SECTION 1701 GENERAL

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

**1701.1.1 Application.** *The scope of application of Chapter 17 is as follows:*

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

**1701.1.2 Amendments in this chapter.** *OSHPD adopts this chapter and all amendments.*

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

**1701.1.3 Identification of amendments.** *[OSHPD 1R, 2 & 5] Office of Statewide Health Planning and Development (OSHPD) amendments appear in this chapter preceded with the appropriate acronym, as follows:*

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

*[OSHPD 2] – For applications listed in Section 1.10.2.*

*[OSHPD 5] – For applications listed in Section 1.10.5.*

### SECTION 1702 NEW MATERIALS

**1702.1 General.** New building materials, equipment, appliances, systems or methods of construction not provided for in this code, and any material of questioned suitability proposed

for use in the construction of a building or structure, shall be subjected to the tests prescribed in this chapter and in the approved rules to determine character, quality and limitations of use.

### SECTION 1703 APPROVALS

**1703.1 Approved agency.** Pursuant to LAMC Section 98.0503, a testing agency shall provide all information required by the Superintendent of Building to determine whether the agency shall become an approved testing agency.

**1703.1.1 Independence.** An approved agency shall be objective, competent and independent from the contractor responsible for the work being inspected. The agency shall disclose to the building official and the registered design professional in responsible charge possible conflicts of interest so that objectivity can be confirmed.

**1703.1.2 Equipment.** An approved agency shall have adequate equipment to perform required tests. The equipment shall be periodically calibrated.

**1703.1.3 Personnel.** An approved agency shall employ experienced personnel educated in conducting, supervising and evaluating tests and special inspections.

**1703.2 Written approval.** Any new material, appliance, equipment, system or method of construction meeting the requirements of this Code shall be approved in writing after satisfactory completion of the required tests and submission of required test reports pursuant to LAMC Sections 98.0501 and 98.0502.

**1703.3 Approved record.** For any material, appliance, equipment, system or method of construction that has been approved, a record of that approval, including the conditions and limitations of the approval, shall be kept on file in the Department and shall be open to public inspection at appropriate times.

**1703.4 Performance.** Specific information consisting of test reports conducted by an approved testing agency in accordance with standards referenced in Chapter 35, Article 1, Chapter IX of the LAMC, or other information as necessary, shall be provided for the Superintendent of Building to determine that the material meets the applicable Code requirements, including LAMC Sections 98.0501 and 98.0502.

*[OSHPD 1R, 2 & 5] Tests performed by an independent approved testing agency/laboratory or under the responsible charge of a competent approved independent Registered Design Professional shall be deemed to comply with requirements of this section. Test reports for structural tests shall be reviewed and accepted by an independent California licensed structural engineer.*

**1703.4.1 Research and investigation.** Sufficient technical data shall be submitted to the Superintendent of Building to substantiate the proposed use of any product, material or assembly. If it is determined that the evidence submitted is satisfactory proof of performance for the use intended, the Superintendent of Building shall approve the use of the product, material or assembly subject to the requirements of this Code. The costs, reports and investigations required under these provisions shall be paid by the permit applicant as required by LAMC Sections 98.0501, 98.0502 and 98.0503.

**1703.4.2 Research reports.** Supporting data, where necessary to assist in the approval of products, materials or assemblies not specifically provided for in this Code, shall consist of valid research reports from approved sources as required in LAMC Sections 98.0501 and 98.0502.

**1703.5 Labeling.** Products, materials or assemblies required to be labeled shall be labeled in accordance with the procedures set forth in Sections 1703.5.1 through 1703.5.4.

**1703.5.1 Testing.** An approved agency shall test a representative sample of the product, material or assembly being labeled to the relevant standard or standards. The approved agency shall maintain a record of the tests performed. The record shall provide sufficient detail to verify compliance with the test standard.

**1703.5.2 Inspection and identification.** The approved agency shall periodically perform an inspection, which shall be in-plant if necessary, of the product or material that is to be labeled. The inspection shall verify that the labeled product, material or assembly is representative of the product, material or assembly tested.

**1703.5.3 Label information.** The label shall contain the manufacturer's identification, model number, serial number or definitive information describing the performance characteristics of the product, material or assembly and the approved agency's identification.

**1703.5.4 Method of labeling.** Information required to be permanently identified on the product, material or assembly shall be acid etched, sand blasted, ceramic fired, laser etched, embossed or of a type that, once applied, cannot be removed without being destroyed.

**1703.6 Evaluation and follow-up inspection services.** Where structural components or other items regulated by this

code are not visible for inspection after completion of a prefabricated assembly, the owner or the owner's authorized agent shall submit a report of each prefabricated assembly. The report shall indicate the complete details of the assembly, including a description of the assembly and its components, the basis upon which the assembly is being evaluated, test results and similar information and other data as necessary for the building official to determine conformance to this code. Such a report shall be approved by the building official.

**1703.6.1 Follow-up inspection.** The owner or the owner's authorized agent shall provide for special inspections of fabricated items in accordance with Section 1704.2.5.

**1703.6.2 Test and inspection records.** Copies of necessary test and special inspection records shall be filed with the building official.

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

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

**1704.1.1 Certified licensed contractors.**

**1704.1.2 Registration.** Application for registration as a certified licensed contractor shall be made to the Superintendent of Building on a form furnished by the Department and a separate application shall be made for each type of registration desired. Before the application can be accepted, the applicant must furnish proof satisfactory to the Department that the applicant holds a valid active California State Contractor's License in the same specialty as the certification requested.

**1704.1.3 Application.**

- 1. Form.** Application for a Certificate of Registration shall be made on a form furnished by the Department.
- 2. Information Necessary.** The application shall bear the name and address of the applicant and, if the applicant is employed by a firm, partnership or corporation, the names of the principal officers should also be included. The application shall carry other information deemed necessary by the Department.
- 3. Verification.** The applicant shall declare that the information contained in the application is true and correct.
- 4. Fee.** The application shall be accompanied by an examination fee of \$188.

**1704.1.4 Examination.**

- 1. Examination Required.** Before issuance of a Certificate of Registration, the applicant shall have successfully passed the examination required for the issuance of the Certificate of Registration within ninety (90) days preceding the date of the issuance.



To be eligible for the examination for a Certificate of Registration, the applicant shall have a valid California State Contractor's License in an appropriate specialty and a valid City Business Tax Certificate.

2. **Board of Examiners.** The Superintendent of Building and/or Board of Examiners composed of three qualified persons appointed by the Superintendent of Building shall conduct examinations. The results of every examination shall be subject to the approval of the Superintendent of Building. Each examiner shall serve at the pleasure of the Superintendent of Building and shall serve for a period of one year unless re-appointed by the Superintendent of Building.
3. **Scope of Examination.** The examination shall, in the judgment of the Superintendent of Building, fairly determine the ability of the applicant to perform properly the work, which he or she would be authorized to do by the Certificate of Registration requested, and may include the following:
  - a. A written test.
  - b. Practical tests as may be required.
  - c. An oral interview as may be required.
  - d. Other tests as may be required by the Board of Examiners.
4. **Time of Examination.** The applicant shall be examined as soon as practicable after filing an application.
5. **Rules and Regulations.** The Department shall have the authority to establish rules and regulations for the conduct of examinations.
6. **Fitness of Applicant.** Any applicant may be required to submit satisfactory proof of his or her fitness to carry out the intent of this Code.
7. **Failure to Pass.** An applicant who fails to pass an examination shall not be eligible for another examination until four (4) weeks after taking the previous examination.

#### 1704.1.5 Issuance of certificates.

1. The Superintendent of Building shall issue separate Certificates of Registration for each of the following categories:
  - a. FAU/AC units; evaporative coolers.
  - b. Domestic water piping/plumbing fixtures/hot water heaters/solar panels.
  - c. Reroofing and roof repair.
  - d. Electrical equipment/fixtures/smoke detectors.
  - e. Masonry and concrete fences.
  - f. Masonry chimney repairs.
  - g. Shower pan replacement.

Nothing here prohibits any person from being qualified for more than one type of certification, provided the person files an application, pays the

required fees, takes the required examinations and is duly qualified by the Superintendent of Building for each type of certification.

2. Upon payment of a \$45 fee, the Department may issue a Certificate of Registration to every applicant who passes the required examination for a Certified Licensed Contractor.
3. Each Certificate of Registration shall expire twelve (12) months from the date of issuance.
4. The Superintendent of Building shall keep on file a list, open to public inspection, of the names of all registered certified licensed contractors, showing the type of work each has been authorized to inspect.
5. Expired Certificates of Registration may be renewed at any time within thirty (30) days following the date of expiration. After a Certificate of Registration has been expired for thirty (30) days, it may not be renewed; rather, a new application for a new certificate must be submitted at that time.

#### 1704.1.6 Exhibition of certificate.

1. Every person having a fixed place of business shall keep his or her Certificate of Registration posted in some conspicuous location at his or her place of business during the time the certificate is in force.
2. Every person not having a fixed place of business shall carry his or her Certificate of Registration with him or her at all times while doing any inspections or other work pursuant to this certificate.

**1704.1.7 Revocation of certificate.** The Superintendent of Building may revoke, suspend or refuse to renew any Certificate of Registration upon a showing of incompetence, willful or negligent failure to observe or report violations of this Code, or failure to maintain a valid active California State Contractor's License in the same specialty as the certification. Prior to any action, the holder shall be given an opportunity to appear before the Superintendent of Building and be heard.

Suspension or revocation of any Certificate of Registration issued under this Section shall be in accordance with the provisions of Article 8, Chapter IX of the LAMC.

**1704.2 Special inspections and tests.** Where application is made for construction as described in this section, the owner or the registered design professional in responsible charge acting as the owner's agent shall employ one or more Registered Deputy Inspectors to perform inspections during construction on the types of work listed under Section 1705. The Registered Deputy Inspector shall be a qualified person as set forth in Section 1704.2.1 and shall demonstrate competence to the satisfaction of the Superintendent of Building for inspection of the particular type of construction or operation requiring special inspection.

The special inspections shall be in addition to the inspections made by the employees of the Department as set forth in Section 108.

All special inspections shall be made by a Registered Deputy Inspector. Whenever the term "Special Inspector" is used

in this Code, it shall mean “Registered Deputy Inspector” as described in Section 1704.2.1 of this Code.

**Exceptions:**

1. Special inspections are not required for construction of a minor nature or as warranted by conditions in the jurisdiction as approved by the Superintendent of Building.
2. Unless otherwise required by the Superintendent of Building, special inspections are not required for Group U occupancies that are accessory to a residential occupancy including, but not limited to, those listed in Section 312.1.
3. Special inspections are not required for portions of structures designed and constructed in accordance with the cold-formed steel light-frame construction provisions of Section 2211.7 or the conventional light-frame construction provisions of Section 2308.
4. The contractor is permitted to employ the approved agencies where the contractor is also the owner.

**1704.2.1 Registered Deputy Inspector qualifications.**

An applicant for Deputy Inspector shall provide written documentation to the Superintendent of Building demonstrating his or her competence and relevant experience or training. Experience or training shall be considered relevant when the documented experience or training is related in complexity to the same type of special inspection activities for projects of similar complexity and material qualities. These qualifications are in addition to qualifications specified in other sections of this Code.

Application for registration as a Registered Deputy Inspector shall be made to the Superintendent of Building on a form furnished by the Department. A separate application shall be made for each type of registration desired. Registration is available for the following types of inspections: Reinforced Concrete (RC), Structural Masonry (SM), Structural Steel/Welding (SSW), Grading (GD), Sprayed Fire resistant Materials (SFRM), Methane Barrier (MB) and Wood (WD).

A committee appointed by the Superintendent of Building shall examine each applicant as to his or her experience and training for performing the duties of an inspector of the type for which application has been made. Additionally, the applicant will be examined on the applicant’s knowledge of the LAMC and Registered Deputy Inspector duties, responsibilities and procedures. When satisfied as to the fitness of the applicant, the Superintendent of Building shall issue a Certificate of Registration. Upon application for renewal of a Certificate of Registration, the applicant shall be re-examined to ascertain the applicant’s fitness to perform the duties of inspector of the type for which application has been made.

**Exception:** If the Department determines that the initial examination (which includes general knowledge, code requirements and plan comprehension) for the special inspector program under the International Code

Council (ICC) is equivalent to the above-described initial or renewal examination, then the Department may accept the results of the ICC examination in lieu of the Department’s examination in that category; however, the Department will be examining the applicant’s knowledge of the LAMC and deputy inspector duties, responsibilities and procedures.

The Superintendent of Building shall issue a separate Certificate of Registration for each type of registration requiring special inspection in accordance with Section 1704 and as determined by the Superintendent of Building for any construction requiring either continuous or periodic special inspection.

Nothing here shall be deemed to prohibit any one person from being qualified for more than one type of special inspection, provided he or she applies, pays the required fees, takes the required examinations and is duly qualified by the Superintendent of Building for each type.

Each Certificate of Registration shall expire three (3) years from the date of issuance, but may be renewed by the Superintendent of Building within a grace period of thirty (30) days thereafter.

The Department shall maintain a list of the names of all Registered Deputy Inspectors, showing the type of work each has been authorized to inspect. This list shall be available to the public.

Upon evidence satisfactory to the Superintendent of Building of incompetence, of willful or negligent failure to observe or report violations of this Code, or of any other failure to perform properly and effectively the duties assumed by a Registered Deputy Inspector, the Superintendent of Building may revoke, suspend or refuse to renew any Certificate of Registration. But, prior to that action, the holder shall be given an opportunity to appear before the Superintendent of Building and be heard.

Except where there is a City employee inspecting buildings or structures being erected or repaired by the City, no Registered Deputy Inspector shall receive any compensation from the City. A Registered Deputy Inspector shall undertake and perform the duties of inspection solely on the request of the owner or the owner’s agent. The designation shall be deemed to indicate that the duties incident to the inspection are within the course and scope of the Registered Deputy Inspector’s employment by the owner or agent, and except where the Registered Deputy Inspector is in fact an employee of the City, the Registered Deputy Inspector shall not be deemed an employee of the City, the contractor, a subcontractor or a material vendor for any purpose.

The registered design professional in responsible charge and engineers of record involved in the design of the project are permitted to act as the supervising agency and their personnel are permitted to act as the deputy inspector for the work designed by them, provided they qualify as Registered Deputy Inspectors.

#### 1704.2.1.1 Duties and responsibilities of the Registered Deputy Inspector.

1. The Registered Deputy Inspector employed on any work must be present during the execution of all the work the Registered Deputy Inspector has undertaken to inspect. The Registered Deputy Inspector shall notify the Department of the commencement of inspection of a job and shall specify the type of inspection for which the Registered Deputy Inspector has been engaged. This notification shall be made no later than the last working day preceding the commencement of inspection. The Registered Deputy Inspector shall report to the job sufficiently in advance of construction to review the plans and to inspect all materials to be used or concealed within the work, shall inspect the construction, erection, placing or other use of the materials, and shall observe whether there is compliance with the Code as to all of the foregoing. During the execution of the work, the Registered Deputy Inspector shall not undertake or engage in any other task or occupation that will interfere with the proper performance of his or her duties relating to the inspections. The Registered Deputy Inspector shall report, as directed, to the Superintendent of Building, noting all violations of this Code that have occurred and any other information as may be required. At the conclusion of the Registered Deputy Inspector's duties on any project, which has been completed in accordance with this Code, the Registered Deputy Inspector shall submit a report to the Department setting forth the portion of the work inspected. The report shall be made on forms supplied by the Department and shall be filed with the Department.
2. Nothing here shall be deemed to authorize any Registered Deputy Inspector to approve any inspection required by this Code, other than the special inspection for which the Registered Deputy Inspector was hired and is of the type for which the Registered Deputy Inspector is registered.
3. Where, in the opinion of the Department, the magnitude or complexity of a job warrants it, additional Registered Deputy Inspectors may be required.
4. Where, in the opinion of the Department, the Registered Deputy Inspector is negligent in the performance of the Deputy Inspector's duties, the job shall be stopped.
5. Nothing herein shall be deemed to authorize any Registered Deputy Inspector to approve the pouring of concrete, the placement of masonry, structural steel or fill prior to the approval of the regular building inspector.

#### 1704.2.1.2 Fees for Registered Deputy Inspector.

1. **New Application.** Before accepting any application for registration as a Registered Deputy

Inspector, the Department shall collect a new examination fee of \$528. A separate application shall be submitted and a separate examination fee shall be collected for each additional type of registration desired. When the applicant passes the examination(s), a Certificate(s) of Registration for each type of examination passed shall be issued. If the applicant fails to pass an examination, the applicant may reapply and again pay the examination fees. No refund(s) will be given to the applicant after the Department has administered the examination(s).

2. **Renewal Application.** Before renewing a Certificate of Registration as a Registered Deputy Inspector, the Department shall collect a renewal Registration and examination fee in the amount of \$482. A separate application shall be submitted and a separate examination fee shall be collected for each additional type of renewal registration desired. When the applicant passes the examination(s), a Certificate(s) of Registration for each type of examination passed shall be issued. If the applicant fails to pass the examination(s), the applicant may reapply; however, the applicant must again pay the renewal Registration and examination fees before the Department can issue the Certificate of Registration(s). No refund(s) will be given to applicant after the Department has administered the examination.
3. **International Code Council (ICC) Certification(s).** International Code Council (ICC) Certification(s) is required prior to taking the Department's new or renewal examination(s). In addition to ICC's certification, the Department's examination will be required for each type of registration and fees collected as specified in this Section.

#### Exceptions:

1. If the ICC does not have an examination for a Department registration, the applicant will be required to take the Department examination only.
2. The ICC Certification may not be required when the Department registration is utilized by the Department of Public Works for City business only.

**1704.2.1.3 Failure to pass examination for Registered Deputy Inspector.** Every applicant who fails to pass a new or renewal examination(s) shall not be eligible for re-examination until 30 days after taking the previous examination.

**1704.2.2 Access for special inspection.** The construction or work for which special inspection or testing is required shall remain accessible and exposed for special inspection or testing purposes until completion of the required special inspections or tests.

**1704.2.3 Statement of special inspections.** The applicant shall submit a statement of special inspections in accor-

dance with Section 106.3.3 as a condition for permit issuance. This statement shall be in accordance with Section 1704.3.

**Exception:** A statement of special inspections is not required for portions of structures designed and constructed in accordance with the cold-formed steel light-frame construction provisions of Section 2211.1.2 or the conventional light-frame construction provisions of Section 2308. *[OSHPD 1R, 2 & 5] Not permitted by OSHPD.*

**1704.2.4 Report requirement.** In addition to all the requirements of Section 1704.2.1.1, Registered Deputy Inspectors shall keep records of inspections and tests. The Registered Deputy Inspectors shall furnish inspection reports and tests to the Superintendent of Building, and to the registered design professional in responsible charge. Reports shall indicate that work inspected was or was not completed in conformance to approved construction documents. Discrepancies shall be brought to the immediate attention of the contractor for correction. If they are not corrected, the discrepancies shall be brought to the attention of the Superintendent of Building and to the registered design professional in responsible charge prior to the completion of that phase of the work. A final report documenting required special inspections and tests, and correction of any discrepancies noted in the inspections or tests, shall be submitted at a point in time agreed upon prior to the start of the work by the owner or owner's authorized agent to the Superintendent of Building.

**1704.2.5 Special inspection of fabricated items.** Where fabrication of structural, load-bearing or lateral load resisting members or assemblies is being conducted on the premises of a fabricator's shop, deputy inspections of the fabricated items shall be performed during fabrication, when approved by the Superintendent of Building, except where the fabricator has been approved to perform work without special inspection in accordance with CBC Section 1704.2.5.1.

**1704.2.5.1 Fabricator approval.** Pursuant to LAMC Section 96.200 *et seq.*, special inspections required by Section 1705 are not required where the work is done on the premises of a fabricator approved to perform such work without special inspection. Approval shall be based upon review of the fabricator's written fabrication procedures and quality control manuals that provide a basis for control of materials and workmanship, with periodic auditing of fabrication and quality control practices by an approved agency or the Superintendent of Building. At completion of fabrication, the approved fabricator shall submit a certificate of compliance to the owner or owner's authorized agent for submittal to the Superintendent of Building as specified in CBC Section 1704.5 stating that the work was performed in accordance with the approved construction documents.

**1704.3 Statement of special inspections.** Where special inspections or tests are required by Section 1705, the regis-

tered design professional in responsible charge shall prepare a statement of special inspections in accordance with Section 1704.3.1 for submittal by the applicant in accordance with Section 1704.2.3.

**Exception:** The statement of special inspections is permitted to be prepared by a qualified person approved by the building official for construction not designed by a registered design professional.

**1704.3.1 Content of statement of special inspections.** The statement of special inspections shall identify the following:

1. The materials, systems, components and work required to have special inspections or tests by the building official or by the registered design professional responsible for each portion of the work.
2. The type and extent of each special inspection.
3. The type and extent of each test.
4. Additional requirements for special inspections or tests for seismic or wind resistance as specified in Sections 1705.12, 1705.13 and 1705.14.
5. For each type of special inspection, identification as to whether it will be continuous special inspection, periodic special inspection or performed in accordance with the notation used in the referenced standard where the inspections are defined.

**1704.3.2 Seismic requirements in the statement of special inspections.** Where Section 1705.13 or 1705.14 specifies special inspections or tests for seismic resistance, the statement of special inspections shall identify the designated seismic systems and seismic force-resisting systems that are subject to the special inspections or tests. *[OSHPD 1R, 2 & 5] Where Section 1705.12 or 1705.13 specifies special inspections or tests for seismic resistance, the statement of special inspections shall identify the equipment/components that require special seismic certification and seismic force-resisting systems that are subject to the special inspection or tests.*

**1704.3.3 Wind requirements in the statement of special inspections.** Where Section 1705.12 specifies special inspection for wind resistance, the statement of special inspections shall identify the main windforce-resisting systems and wind-resisting components that are subject to special inspections.

**1704.4 Contractor responsibility.** Each contractor responsible for the construction of a main wind- or seismic force-resisting system, designated seismic system or a wind- or seismic force-resisting component listed in the statement of special inspections shall submit a written statement of responsibility to the building official and the owner or the owner's authorized agent prior to the commencement of work on the system or component. The contractor's statement of responsibility shall contain acknowledgement of awareness of the special requirements contained in the statement of special inspections.

**1704.5 Submittals to the building official.** In addition to the submittal of reports of special inspections and tests in accor-

dance with Section 1704.2.4, reports and certificates shall be submitted by the owner or the owner's authorized agent to the building official for each of the following:

1. Certificates of compliance for the fabrication of structural, load-bearing or lateral load-resisting members or assemblies on the premises of an approved fabricator in accordance with Section 1704.2.5.1.
2. Certificates of compliance for the seismic qualification of nonstructural components, supports and attachments in accordance with Section 1705.14.2.
3. Certificates of compliance for designated seismic systems in accordance with Section 1705.14.3.
4. Reports of preconstruction tests for shotcrete in accordance with ACI 318.
5. Certificates of compliance for open web steel joists and joist girders in accordance with Section 2207.5.
6. Reports of material properties verifying compliance with the requirements of AWS D1.4 for weldability as specified in Section 26.6.4 of ACI 318 for reinforcing bars in concrete complying with a standard other than ASTM A706 that are to be welded.
7. Reports of mill tests in accordance with Section 20.2.2.5 of ACI 318 for reinforcing bars complying with ASTM A615 and used to resist earthquake-induced flexural or axial forces in the special moment frames, special structural walls or coupling beams connecting special structural walls of seismic force-resisting systems in structures assigned to Seismic Design Category B, C, D, E or F.

**1704.6 Structural observations.** Where required by the provisions of Section 1704.6.1, the owner shall employ the registered design professional in responsible charge for the structural design, or another registered design professional designated by the registered design professional in responsible charge of the structural design, to perform structural observations as defined in CBC Section 202. The structural observer shall visually observe representative locations of structural systems, details and load paths for general conformance to the approved construction documents.

Prior to the commencement of observations, the structural observer shall submit to the Superintendent of Building a written statement identifying the frequency and extent of proposed structural observations.

The owner or owner's representative shall coordinate and call a preconstruction meeting between the engineer or architect responsible for the structural design, structural observer, contractor, affected subcontractors and deputy inspectors. The structural observer shall preside over the meeting. The purpose of the meeting shall be to identify the major structural elements and connections that affect the vertical and lateral load systems of the structure and to review scheduling of the required observations. A record of the meeting shall be included in the first report submitted to the Superintendent of Building.

Observed deficiencies shall be reported, in writing, to the owner's representative, Registered Deputy Inspector, con-

tractor and the Superintendent of Building. Upon the form prescribed by the Superintendent of Building, the structural observer shall submit to the Superintendent of Building a written statement at each significant construction stage stating that the site visits have been made and identify any reported deficiencies which, to the best of the structural observer's knowledge, have not been resolved. A final report by the structural observer, which states that all observed deficiencies have been resolved, is required before acceptance of the work by the Superintendent of Building.

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

1. The structure is classified as Risk Category III or IV.
2. The structure is a high-rise building.
3. A lateral design is required for the structure or portion thereof.

**Exception:** One-story wood framed Group R-3 and U occupancies less than 2,000 square feet in area, provided the adjacent grade is not steeper than 1 unit vertical in 10 units horizontal (10-percent slope), assigned to Seismic Design Category D.

4. Such observation is required by the registered design professional responsible for the structural design.
5. Such observation is specifically required by the building official.

## SECTION 1705 REQUIRED SPECIAL INSPECTIONS AND TESTS

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

**1705.1.1 Special cases.** Special inspections and tests shall be required for proposed work that is, in the opinion of the building official, unusual in its nature, such as, but not limited to, the following examples:

1. Construction materials and systems that are alternatives to materials and systems prescribed by this code.
2. Unusual design applications of materials described in this code.
3. Materials and systems required to be installed in accordance with additional manufacturer's instructions that prescribe requirements not contained in this code or in standards referenced by this code.

**1705.1.2 Certifications by engineer or geologist.** If the grading or foundation earthwork has required continuous inspection, the responsible engineering geologists or soils engineer shall certify by signature to the Department that, to the best of his or her knowledge, the field work was completed in conformity with the technical design data.

**1705.1.3 Department's responsibility.** The employment of a Registered Deputy Inspector for any work does not deprive the Department of the right to make periodic or called inspections of all or portions of the work. On any work requiring continuous inspection by a Registered Deputy Inspector, the called inspections required by Section 108 of this Code may be delegated to the Registered Deputy Inspector by the Superintendent of Building.

**1705.1.4 Structural, termite and fungus damage.** Every building raised from its foundation shall be inspected. If there is any superficial evidence of structural damage, termites or fungus growth, the permittee shall remove and renew the damaged or infested members before reseating the building or moving it from its existing site or into the City.

**1705.1.5 Emergencies or catastrophes.** In the event of an emergency or of a major catastrophe in the City, the Department may deputize Emergency Building Inspectors for the Department. The inspectors shall receive no compensation from the City, and they shall be appointed for the periods of time the Department deems advisable.

**1705.1.6 Special activity inspection.** In addition to the construction or work inspected as described in Sections 108 and 1704 through 1705 of this Code, there are other construction activities that are sufficiently important to the structural stability of the structure, the occupants of and the fire and life safety of the structure that inspection by a specially qualified inspector of these activities is necessary in order to ensure compliance with the requirements of this Code. These special activity inspections may occur during off-site fabrication or during on-site construction.

Inspections by Department Approved Special Activity Inspectors will be required in accordance with regulations promulgated by the Superintendent of Building where:

1. The structure is more than five stories or 60 feet (18 288 mm) in height.
2. The structure exceeds 50,000 square feet (4645 m<sup>2</sup>) of ground area or 200,000 square feet (18 580 m<sup>2</sup>) of total floor area.
3. Nondestructive structural testing methods are utilized.
4. The quality identification markings of the materials used are not inspectable after installation.
5. The manner of use of materials precludes full inspection after installation.

**Exception:** The Department may waive continuous or periodic inspection required by this Section where minor quantities are involved and no unusual hazards exist.

In addition to the projects included in the above categories, the Superintendent of Building may require Special Activity inspections if the Superintendent of Building determines that these inspections are needed to ensure compliance with the provisions of this Code and the work involves:

6. Unique, novel or innovative construction;
7. Highly complex or intricate construction;

8. Unique, novel or innovative grading, earth support or foundation procedures; or

9. New methods of construction not yet provided for in the rules and regulations.

Special Activity inspection authority will be determined on a case by case basis and will require Registered Deputy Inspector registration. The Superintendent of Building shall adopt rules and regulations implementing the provisions of this Section. These regulations may establish and set the requirements for different types of Department Approved Special Activity Inspectors.

**1705.1.7 Special activity inspection authority.**

**1705.1.8 Registration.** The procedures and conditions of registration as a Special Activity Inspector shall be the same as applicable to a Registered Deputy Inspector under Section 1704.2.1, except that the extent and duration of special inspection authority shall be as specified in the rules and regulations adopted by the Superintendent of Building.

**1705.1.9 Duties.** Except as otherwise indicated by regulations promulgated by the Superintendent of Building, the duties and responsibilities for a Special Activity Inspector shall be the same as specified for a Registered Deputy Inspector under Section 1704.2.1.1.

**1705.1.10 Fees.** The procedures for the examination, registration and renewal of authority as a Special Activity Inspector shall be the same as specified for Registered Deputy Inspectors under Section 1704.2.1.2.

**1705.1.11 Renewal process.** Section 1704.2.1.2 applies to the application, examination and renewal process for registration as a Special Activity Inspector.

**1705.1.12 Certification of welders.**

**1705.1.13.** The Superintendent of Building shall suspend or revoke any certificate upon evidence of failure of the person so certified to conduct welding operations in compliance with any of the conditions upon which it is based, or where quality of workmanship is not equivalent to that required by code, or for any of the reasons set forth in Article 8, Chapter IX of the LAMC. Any action shall be in accordance with the provisions of Article 8, Chapter IX of the LAMC.

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

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

carrying elements where required by the approved construction documents.

**1705.2.1 Structural steel.** Special inspections and nondestructive testing of structural steel elements in buildings, structures and portions thereof shall be in accordance with the quality assurance inspection requirements of AISC 360.

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

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

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

The following provisions of AISC 360, Chapter N are not adopted:

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

**1705.2.2 Cold-formed steel deck.** Special inspections and qualification of welding special inspectors for cold-formed steel floor and roof deck shall be in accordance with the quality assurance inspection requirements of SDI QA/QC.

**1705.2.3 Open-web steel joists and joist girders.** Special inspections of open-web steel joists and joist girders in buildings, structures and portions thereof shall be in accordance with Table 1705.2.3.

**1705.2.3.1 Steel joist and joist girder inspection.** **[OSHPD 1R, 2 & 5]** Special inspection is required during the manufacture and welding of steel joists or joist girders. The approved agency shall verify that proper quality control procedures and tests have been

employed for all materials and the manufacturing process, and shall perform visual inspection of the finished product. The approved agency shall place a distinguishing mark, and/or tag with this distinguishing mark, on each inspected joist or joist girder. This mark or tag shall remain on the joist or joist girder throughout the job site receiving and erection process.

**1705.2.4 Cold-formed steel trusses spanning 60 feet or greater.** Where a cold-formed steel truss clear span is 60 feet (18 288 m) or greater, the Registered Deputy Inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.

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

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

The welding inspector shall make a systematic daily record of all welds. This record shall include:

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

**TABLE 1705.2.3  
REQUIRED SPECIAL INSPECTIONS OF OPEN-WEB STEEL JOISTS AND JOIST GIRDERS**

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD <sup>a</sup>
1. Installation of open-web steel joists and joist girders.			
a. End connections – welding or bolted.	—	X	SJI specifications listed in Section 2207.1.
b. Bridging – horizontal or diagonal.	—	—	—
1. Standard bridging.	—	X	SJI specifications listed in Section 2207.1.
2. Bridging that differs from the SJI specifications listed in Section 2207.1.	—	X	—

For SI: 1 inch = 25.4 mm.

a. Where applicable, see Section 1705.13.

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

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

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

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

1. Isolated spread concrete footings of buildings three stories or less above grade plane that are fully supported on earth or rock, where the structural design of the footing is based on a specified compressive strength,  $f'_c$ , no greater than 2,500 pounds per square inch (psi) (17.2 MPa).
2. Continuous concrete footings supporting walls of buildings three stories or less above grade plane that are fully supported on earth or rock where:
  - 2.1. The footings support walls of light-frame construction;
  - 2.2. The footings are designed in accordance with Table 1809.7; or
  - 2.3. The structural design of the footing is based on a specified compressive strength,  $f'_c$ , not more than 2,500 pounds per square inch (psi) (17.2 MPa), regardless of the compressive strength specified in the approved construction documents or used in the footing construction.
3. Nonstructural concrete slabs supported directly on the ground, including prestressed slabs on grade, where the effective prestress in the concrete is less than 150 psi (1.03 MPa).
4. Concrete foundation walls constructed in accordance with Table 1807.1.6.2.
5. Concrete patios, driveways and sidewalks on grade.

**1705.3.1 Welding of reinforcing bars.** Special inspections of welding and qualifications of special inspectors for reinforcing bars shall be in accordance with the requirements of AWS D1.4 for special inspection and of AWS D1.4 for special inspector qualification.

**1705.3.1.1 Structural inspection—concrete.** During the construction of all buildings over 160 feet (48.768 m) in height with concrete special moment-resisting space frames, a structural inspector under the supervision of the engineer responsible for the structural design shall be present to inspect the materials and workmanship for conformance with approved plans, specifications and change orders involved in construction of the ductile frames and shear walls. This inspection may be made by one or more structural inspectors, provided that at least one structural inspector is present during the placement of all concrete and reinforcement in the structural frame and shear walls.

The number of structural inspectors to be provided for each structure shall be determined by the engineer responsible for the structural design, provided that more than one structural inspector shall be provided where the magnitude of a structure prevents a single inspector from adequately performing the inspection.

The owner shall provide each structural inspector. Each structural inspector shall be paid by the owner directly or through the person responsible for the structural design. Each structural inspector shall be responsible to the person who prepared the structural design.

The inspection by the structural inspector or inspectors shall be in addition to inspections made by Department employees as specified in Section 108 and by Registered Deputy Inspectors as specified for other parts of the work in Section 1704.

Prior to the issuance of the Certificate of Occupancy, each structural inspector shall submit a report in writing to the engineer and the Department certifying that the portions of the structural frame inspected by the inspector were constructed in accordance with the approved plans, specifications, change orders and Chapter 19 of this Code.

**1705.3.2 Material tests.** In the absence of sufficient data or documentation providing evidence of conformance to quality standards for materials in Chapters 19 and 20 of ACI 318, the Superintendent of Building shall require testing of materials in accordance with the appropriate standards and criteria for the material in Chapters 19 and 20 of ACI 318. Weldability of reinforcement, except that which conforms to ASTM A706, shall be determined in accordance with the requirements of Section 26.6.4 of ACI 318.

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



**TABLE 1705.3  
REQUIRED SPECIAL INSPECTIONS AND TESTS OF CONCRETE CONSTRUCTION**

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	REFERENCED STANDARD <sup>a</sup>	CBC REFERENCE
1. Inspect reinforcement, including prestressing tendons, and verify placement.	—	X	ACI 318: Ch. 20, 25.2, 25.3, 26.6.1-26.6.3	—
2. Reinforcing bar welding:				
a. Verify weldability of reinforcing bars other than ASTM A706;	—	X	AWS D1.4 ACI 318: 26.6.4	—
b. Inspect single-pass fillet welds, maximum $\frac{5}{16}$ " ; and	—	X		
c. Inspect all other welds.	X	—		
3. Inspect anchors cast in concrete.	—	X	ACI 318: 17.8.2	—
4. Inspect anchors post-installed in hardened concrete members. <sup>b</sup>				
a. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. <sup>c</sup>	X	—	ACI 318: 17.8.2.4	—
b. Mechanical anchors and adhesive anchors not defined in 4.a.	—	X	ACI 318: 17.8.2	
5. Verify use of required design mix.	—	X	ACI 318: Ch. 19, 26.4.3, 26.4.4	1904.1, 1904.2
6. Prior to concrete placement, fabricate specimens for strength tests, perform slump and air content tests, and determine the temperature of the concrete.	X	—	ASTM C31 ASTM C172 ACI 318: 26.5, 26.12	—
7. Inspect concrete and shotcrete placement for proper application techniques.	X	—	ACI 318: 26.5	—
8. Verify maintenance of specified curing temperature and techniques.	—	X	ACI 318: 26.5.3-26.5.5	—
9. Inspect prestressed concrete for:				
a. Application of prestressing forces; and	X	—	ACI 318: 26.10	—
b. Grouting of bonded prestressing tendons.	X	—		
10. Inspect erection of precast concrete members.	—	X	ACI 318: 26.9	—
11. For precast concrete diaphragm connections or reinforcement at joints classified as moderate or high deformability elements (MDE or HDE) in structures assigned to Seismic Design Category C, D, E or F, inspect such connections and reinforcement in the field for:				
a. Installation of the embedded parts	X	—	ACI 318: 26.13.1.3	—
b. Completion of the continuity of reinforcement across joints.	X	—	ACI 550.5	
c. Completion of connections in the field.	X	—		
12. Inspect installation tolerances of precast concrete diaphragm connections for compliance with ACI 550.5.	—	X	ACI 318: 26.13.1.3	—
13. Verify in-situ concrete strength, prior to stressing of tendons in post-tensioned concrete and prior to removal of shores and forms from beams and structural slabs.	—	X	ACI 318: 26.11.2	—
14. Inspect formwork for shape, location and dimensions of the concrete member being formed.	—	X	ACI 318: 26.11.1.2(b)	—

For SI: 1 inch = 25.4 mm.

a. Where applicable, see Section 1705.13.

b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with 17.8.2 in ACI 318, or other qualification procedures. Where specific requirements are not provided, special inspection requirements shall be specified by the registered design professional and shall be approved by the building official prior to the commencement of the work.

c. **[OSHPD 1R, 2 & 5]** Installation of all adhesive anchors in horizontal and upwardly inclined positions shall be performed by an ACI/CRSI Certified Adhesive Anchor Installer, except where the factored design tension on the anchors is less than 100 pounds and those anchors are clearly noted on the approved construction documents or where the anchors are shear dowels across cold joints in slabs on grade where the slab is not part of the lateral force-resisting system.

**1705.3.3.1 Waiver of continuous batch plant inspection.** [OSHPD 1R, 2 & 5] Continuous batch plant inspection may be waived by the registered design professional, subject to approval by the enforcement agency under either of the following conditions:

1. The concrete plant complies fully with the requirements of ASTM C94, Sections 9 and 10, and has a current certificate from the National Ready Mixed Concrete Association or another agency acceptable to the enforcement agency. The certification shall indicate that the plant has automatic batching and recording capabilities.
2. For single-story light-framed construction (without basement or retaining walls higher than 6 feet in height measured from bottom of footing to top of wall) and isolated foundations supporting equipment only, where deep foundation elements are not used.

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

1. An approved agency shall check the first batch at the start of the day to verify materials and proportions conform to the approved mix design.
2. A licensed weighmaster shall positively identify quantity of materials and certify each load by a batch ticket.
3. Batch tickets, including material quantities and weights, shall accompany the load, shall be transmitted to the inspector of record by the truck driver with load identified thereon. The load shall not be placed without a batch ticket identifying the mix. The inspector of record shall keep a daily record of placements, identifying each truck, its load, time of receipt at the job site and approximate location of deposit in the structure and shall maintain a copy of the daily record as required by the enforcement agency.

**1705.3.4 Inspection and testing of prestressed concrete.** [OSHPD 1R, 2 & 5] Inspections and tests for prestressed concrete work shall be in accordance with this section. Tests for prestressing steel and anchorage shall be per Section 1910A.3. Inspection shall be in accordance with the following:

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

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

2. The prestressed concrete plant fabrication inspector shall check the materials, equipment, tensioning procedure and construction of the prestressed members and prepare daily written reports. The approved agency

shall make a verified report identifying the members by mark and shall include such pertinent data as lot numbers of tendons used, tendon jacking forces, age and strength of concrete at time of tendon release and such other information that may be required.

3. The inspector of prestressed members post-tensioned at the site shall check the condition of the prestressing tendons, anchorage assemblies and concrete in the area of the anchorage, the tensioning equipment and the tensioning procedure and prepare daily written reports. The approved agency shall make a verified report of the prestressing operation identifying the members or tendons by mark and including such pertinent data as the initial cable slack, net elongation of tendons, jacking force developed and such other information as may be required.
4. The verified reports of construction shall show that of the inspector's own personal knowledge, the work covered by the report has been performed and materials used and installed in every material respect in compliance with the duly approved plans and specifications for plant fabrication inspection. The verified report shall be accompanied by test reports required for materials used. For site post-tensioning inspections the verified report shall be accompanied by copies of calibration charts, certified by an approved testing laboratory, showing the relationship between gage readings and force applied by the jacks used in the prestressing procedure

**1705.3.5 Concrete pre-placement inspection.** [OSHPD 1R, 2 & 5] Concrete shall not be placed until the forms and reinforcement have been inspected, all preparations for the placement have been completed, and the preparations have been checked by the Inspector of Record.

**1705.3.6 Placing record.** [OSHPD 1R, 2 & 5] A record shall be kept on the site of the time and date of placing the concrete in each portion of the structure. Such record shall be kept until the completion of the structure and shall be open to the inspection of the enforcement agency.

**1705.3.7 Composite construction cores.** [OSHPD 1R, 2 & 5] Composite construction cores shall be taken and tested in accordance with Section 1910A.4.

**1705.3.8 Special Inspections and tests for post-installed anchors in concrete.** [OSHPD 1R, 2 & 5] Special inspections and tests for post-installed anchors in concrete shall be in accordance with Table 1705.3 and Section 1901.3.

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

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

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

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

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

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

1. Empirically designed masonry, glass unit masonry or masonry veneer designed in accordance with Section 2109, Section 2110 or Chapter 14, respectively, where they are part of a structure classified as Risk Category I, II or III.
2. Masonry foundation walls constructed in accordance with Table 1807.1.6.3(1), 1807.1.6.3(2), 1807.1.6.3(3) or 1807.1.6.3(4).
3. Masonry fireplaces, masonry heaters or masonry chimneys installed or constructed in accordance with Section 2111, 2112 or 2113, respectively.

**1705.4.1 Glass unit masonry and masonry veneer in Risk Category IV.** Special inspections and tests for glass unit masonry or masonry veneer designed in accordance with Section 2110 or Chapter 14, respectively, where they are part of a structure classified as Risk Category IV shall be performed in accordance with TMS 602 Level 2. **[OSHPD 1R, 2 & 5]** Not permitted by OSHPD.

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

**1705.4.2 Vertical masonry foundation elements.** Special inspections and tests of vertical masonry foundation elements shall be performed in accordance with Section 1705.4.

**1705.5 Wood construction.** Special inspections of prefabricated wood structural elements and assemblies shall be in accordance with Section 1704.2.5. Special inspections of site-built assemblies shall be in accordance with this section.

**1705.5.1 High-load diaphragms.** High-load diaphragms designed in accordance with Section 2306.2 shall be installed with special inspections as indicated in Section 1704.2. The special inspector shall inspect the wood structural panel sheathing to ascertain whether it is of the grade and thickness shown on the approved construction documents. Additionally, the special inspector must verify the nominal size of framing members at adjoining panel edges, the nail or staple diameter and length, the number of fastener lines and that the spacing between fasteners in each line and at edge margins agrees with the approved construction documents.

**1705.5.2 Metal-plate-connected wood trusses spanning 60 feet or greater.** Where a truss clear span is 60 feet (18 288 mm) or greater, the special inspector shall verify that the temporary installation restraint/bracing and the permanent individual truss member restraint/bracing are installed in accordance with the approved truss submittal package.

**1705.5.3 Mass timber construction.** Special inspections of mass timber elements in Types IV-A, IV-B and IV-C construction shall be in accordance with Table 1705.5.3.

**1705.5.4 [OSHPD 1R, 2 & 5] Manufactured trusses and assemblies.** The fabrication of trusses and other assemblies constructed using wood and metal members, or using light metal plate connectors, shall be continuously inspected by an approved agency. The approved agency shall furnish the architect, structural engineer and the enforcement agency with a report that the lumber species, grades and moisture content; type of glue, temperature and gluing procedure; type of metal members and metal plate connectors; and the workmanship conform in every material respect with the duly approved construction documents. Each inspected truss shall be stamped by the approved agency with an identifying mark.

**TABLE 1705.5.3  
REQUIRED SPECIAL INSPECTIONS OF MASS TIMBER CONSTRUCTION**

TYPE		CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION	
1.	Inspection of anchorage and connections of mass timber construction to timber deep foundation systems.		—	X
2.	Inspect erection of mass timber construction.		—	X
3.	Inspection of connections where installation methods are required to meet design loads.			
	Threaded fasteners	Verify use of proper installation equipment.	—	X
		Verify use of pre-drilled holes where required.	—	X
		Inspect screws, including diameter, length, head type, spacing, installation angle and depth.	—	X
	Adhesive anchors installed in horizontal or upwardly inclined orientation to resist sustained tension loads.		X	—
	Adhesive anchors not defined in preceding cell.		—	X
	Bolted connections.		—	X
	Concealed connections.		—	X

**1705.5.5 Structural glued laminated and cross-laminated timber. [OSHPD 1R, 2B & 5]** Manufacture of all structural glued laminated and cross-laminated timber shall be continuously inspected by an approved agency.

The approved agency shall verify that proper quality control procedures and tests have been employed for all materials and the manufacturing process, and shall perform visual inspection of the finished product. Each inspected member shall be stamped by the approved agency with an identification mark.

**Exception:** Special Inspection is not required for non-custom prismatic glued laminated members identified on drawings and sourced from stock or general inventory of 5<sup>1</sup>/<sub>2</sub>-inch (140 mm) maximum width and 18-inch (457 mm) maximum depth, and with a maximum clear span of 32 feet (9754 mm), manufactured and marked in accordance with ANSI A190.1 Section 13.1 for non-custom members.

**1705.5.6 Manufactured open web trusses. [OSHPD 1R, 2 & 5]** The manufacture of open web trusses shall be continuously inspected by an approved agency.

The approved agency shall verify that proper quality control procedures and tests have been employed for all materials and the manufacturing process, and shall perform visual inspection of the finished product. Each inspected truss shall be stamped with an identification mark by the approved agency.

**1705.5.7 Timber connectors. [OSHPD 1R, 2 & 5]** The installation of all split ring and shear plate timber connectors and timber rivets shall be continuously inspected by an approved agency. The approved agency shall furnish the architect, structural engineer and the enforcement agency with a report verifying that the materials, timber connectors and workmanship conform to the approved construction documents.

ment and load-bearing requirements shall be as required by this section and Table 1705.6. The approved geotechnical report, and the construction documents prepared by the registered design professionals shall be used to determine compliance. During fill placement, the special inspector shall determine that proper materials and procedures are used in accordance with the provisions of the approved geotechnical report, as specified in Section 1803.6.

**Exception:** Special inspection is not required during placement of controlled fill having a total depth of 12 inches (305 mm) or less and where the fill is not used for graded slopes or for support of footings or foundations.

**1705.6.1 Soil fill. [OSHPD 1R, 2 & 5]** All fills used to support the foundations of any building or structure shall be continuously inspected by the geotechnical engineer or his or her qualified representative. It shall be the responsibility of the geotechnical engineer to verify that fills meet the requirements of the approved construction documents and to coordinate all fill inspection and testing during construction involving such fills.

The duties of the geotechnical engineer or his or her qualified representative shall include, but need not be limited to, the inspection of cleared areas and benches prepared to receive fill; inspection of the removal of all unsuitable soils and other materials; the approval of soils to be used as fill material; the inspection of placement and compaction of fill materials; the testing of the completed fills; and the inspection or review of geotechnical drainage devices, buttress fills or other similar protective measures in accordance with the approved construction documents.

A verified report shall be submitted by the geotechnical engineer as required by the California Administrative Code. The report shall indicate that all tests and inspections required by the approved construction documents were completed and whether the tested materials and/or inspected work meet the requirements of the approved construction documents.

**1705.6 Soils.** Special inspections defined per Sections 7008.2 and 7011.3 and tests for existing site soil conditions, fill place-

**1705.6.2 Grading.** A registered Grading Inspector is required under all conditions where the site grading or foundation earthwork planned on a project has any of the following:

1. A contiguous grading area exceeding 60,000 square feet (5574 m<sup>2</sup>).
2. An excavated or filled slope steeper than 2 horizontal in 1 vertical (50 percent slope).
3. An excavated slope exceeding 40 feet (12 192 mm) in height and the top of which is within 20 feet (6096 mm) of a property line coterminous with improved private property or a public way.
4. Foundation excavations below a 1 horizontal in 1 vertical plane inward and down from the property line.

**Exception:** The Department may waive continuous inspection where minor areas or heights are involved and no unusual hazards exist.

**1705.7 Driven deep foundations and connecting grade beams.** Special inspections and tests shall be performed during installation and testing of the driven deep foundation elements as specified by CBC Table 1705.7. The approved geotechnical report, required by CBC Section 1803.6 and the construction documents prepared by the registered design professionals shall be used to determine compliance. Special

inspections for connecting grade beams shall be in accordance with Section 1705.3.

**1705.7.1 Driven deep foundations observation. [OSHDP 1R, 2 & 5]** *The installation of driven deep foundations shall be continuously observed by a qualified representative of the geotechnical engineer responsible for that portion of the project.*

*The representative of the geotechnical engineer shall make a report of the deep foundation pile-driving operation giving such pertinent data as the physical characteristics of the deep foundation pile-driving equipment, identifying marks for each deep foundation pile, total depth of embedment for each deep foundation; and when the allowable deep foundation pile loads are determined by a dynamic load formula, the design formula used, and the permanent penetration under the last 10 blows. One copy of the report shall be sent to the enforcement agency.*

**1705.8 Cast-in-place deep foundations and connecting grade beams.** Special inspections and tests shall be performed during installation and testing of cast-in-place deep foundation elements as specified by CBC Table 1705.8. The approved geotechnical report, required by Section 1803.6 and the construction documents prepared by the registered design professionals shall be used to determine compliance. Special inspections for connecting grade beams shall be in accordance with Section 1705.3.

**TABLE 1705.6  
REQUIRED SPECIAL INSPECTIONS AND TESTS OF SOILS**

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. Verify materials below shallow foundations are adequate to achieve the design bearing capacity.	—	X
2. Verify excavations are extended to proper depth and have reached proper material.	—	X
3. Perform classification and testing of compacted fill materials.	—	X
4. During fill placement, verify use of proper materials and procedures in accordance with the provisions of the approved geotechnical report. Verify densities and lift thicknesses during placement and compaction of compacted fill.	X	—
5. Prior to placement of compacted fill, inspect subgrade and verify that site has been prepared properly.	—	X

**TABLE 1705.7  
REQUIRED SPECIAL INSPECTIONS AND TESTS OF DRIVEN DEEP FOUNDATION ELEMENTS**

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. Verify element materials, sizes and lengths comply with the requirements.	X	—
2. Determine capacities of test elements and conduct additional load tests, as required.	X	—
3. Inspect driving operations and maintain complete and accurate records for each element.	X	—
4. Verify placement locations and plumbness, confirm type and size of hammer, record number of blows per foot of penetration, determine required penetrations to achieve design capacity, record tip and butt elevations and document any damage to foundation element.	X	—
5. For steel elements, perform additional special inspections in accordance with Section 1705.2.	In accordance with Section 1705.2	
6. For concrete elements and concrete-filled elements, perform tests and additional special inspections in accordance with Section 1705.3.	In accordance with Section 1705.3	
7. For specialty elements, perform additional inspections as determined by the registered design professional in responsible charge.	In accordance with Statement of Special Inspections	

**TABLE 1705.8**  
**REQUIRED SPECIAL INSPECTIONS AND TESTS OF CAST-IN-PLACE DEEP FOUNDATION ELEMENTS**

TYPE	CONTINUOUS SPECIAL INSPECTION	PERIODIC SPECIAL INSPECTION
1. Inspect drilling operations and maintain complete and accurate records for each element.	X	—
2. Verify placement locations and plumbness, confirm element diameters, bell diameters (if applicable), lengths, embedment into bedrock (if applicable) and adequate end-bearing strata capacity. Record concrete or grout volumes.	X	—
3. For concrete elements, perform tests and additional special inspections in accordance with Section 1705.3.	In accordance with Section 1705.3	

**1705.9 Helical pile foundations.** Continuous special inspections shall be performed during installation of helical pile foundations. The information recorded shall include installation equipment used, pile dimensions, tip elevations, final depth, final installation torque and other pertinent installation data as required by the registered design professional in responsible charge. The approved geotechnical report and the construction documents prepared by the registered design professional shall be used to determine compliance.

**1705.10 Structural integrity of deep foundation elements.** Whenever there is a reasonable doubt as to the structural integrity of a deep foundation element, an engineering assessment shall be required. The engineering assessment shall include tests for defects performed in accordance with ASTM D4945, ASTM D5882, ASTM D6760 or ASTM D7949, or other approved method.

**1705.11 Fabricated items.** Special inspections of fabricated items shall be performed in accordance with Section 1704.2.5.

**1705.12 Special inspections for wind resistance.** Special inspections for wind resistance specified in Sections 1705.12.1 through 1705.12.3, unless exempted by the exceptions to Section 1704.2, are required for buildings and structures constructed in the following areas:

1. In wind Exposure Category B, where V is 150 miles per hour (67 m/sec) or greater.
2. In wind Exposure Category C or D, where V is 140 mph (62.6 m/sec) or greater.

**1705.12.1 Structural wood.** Continuous special inspection is required during field gluing operations of elements of the main windforce-resisting system. Periodic special inspection is required for nailing, bolting, anchoring and other fastening of elements of the main windforce-resisting system, including wood shear walls, wood diaphragms, drag struts, braces and hold-downs.

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

**1705.12.2 Cold-formed steel light-frame construction.** Periodic special inspection is required for welding opera-

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

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

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

**1705.12.3 Wind-resisting components.** Periodic special inspection is required for fastening of the following systems and components:

1. Roof covering, roof deck and roof framing connections.
2. Exterior wall covering and wall connections to roof and floor diaphragms and framing.

**1705.13 Special inspections for seismic resistance.** Special inspections for seismic resistance shall be required as specified in Sections 1705.13.1 through 1705.13.9, unless exempted by the exceptions of Section 1704.2.

**Exception:** The special inspections specified in Sections 1705.13.1 through 1705.13.9 are not required for structures designed and constructed in accordance with one of the following:

1. The structure consists of light-frame construction; the design spectral response acceleration at short periods,  $S_{DS}$ , as determined in Section 1613.2.4, does not exceed 0.5; and the building height of the structure does not exceed 35 feet (10 668 mm).
2. The seismic force-resisting system of the structure consists of reinforced masonry or reinforced concrete; the design spectral response acceleration at short periods,  $S_{DS}$ , as determined in Section 1613.2.4, does not exceed 0.5; and the building height of the structure does not exceed 25 feet (7620 mm).

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

- 3.1. Torsional or extreme torsional irregularity.
- 3.2. Nonparallel systems irregularity.
- 3.3. Stiffness-soft story or stiffness-extreme soft story irregularity.
- 3.4. Discontinuity in lateral strength-weak story irregularity.

**1705.13.1 Structural steel.** Special inspection for seismic resistance shall be in accordance with CBC Section 1705.12.1.1 or 1705.12.1.2, as applicable and during the fabrication and erection of buildings over 160 feet (48,768 mm) in height with structural steel moment resisting frames. A registered deputy inspector shall be present during the performance of all structural welding or the installation of all high-strength bolts whether in a fabricator's shop or at the job site.

**Exceptions:**

1. Single-pass fillet welds not exceeding  $5/16$ -inch (7.9 mm) in size.
2. Floor and roof deck welding.

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

**Exceptions:**

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

**1705.13.1.1.1 Certification.** For buildings exceeding 160 feet (48,768 m) in height, the engineer responsible for the structural design and the general contractor responsible for the construction, or their competent authorized representatives, shall make periodic inspections of the work at the site to verify general compliance with the approved plans, specifications and change orders. The engineer and general contractor shall submit a statement in writing to the Department stating that they know from personal

knowledge that the materials installed and the structural work performed are in compliance with the approved plans, specifications and change orders.

The phrase "personal knowledge" as used above in reference to the engineer and general contractor means the knowledge resulting from the general observation by the engineer and the general supervision by the contractor of the work, as required by both in the superintendence of the building's construction, as distinguished from the continuous personal superintendence of the special inspector and/or deputy inspector who are continuously at the site during the progress of the work. The exercise of reasonable diligence to obtain the facts is required and anyone who intentionally remains unaware may be charged with knowledge. The interpretation of personal knowledge as it applies to the special inspector and/or Registered Deputy Inspector is that the inspector(s) must have actual personal knowledge that the requirements of the plans and specifications are being carried out, which is obtained by the inspector's continuous observation of the work of construction at the site in all stages of its progress.

**Exception:** Special inspections of structural steel in structures assigned to Seismic Design Category C that are not specifically detailed for seismic resistance, with a response modification coefficient,  $R$ , of 3 or less, excluding cantilever column systems.

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

**Exceptions:**

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

**1705.13.2 Structural wood.** For the seismic force-resisting systems of structures assigned to Seismic Design Category C, D, E or F:

1. Continuous special inspection shall be required during field gluing operations of elements of the seismic force-resisting system.

2. Periodic special inspection shall be required for nailing, bolting, anchoring and other fastening of elements of the seismic force-resisting system, including wood shear walls, wood diaphragms, drag struts, braces, shear panels and hold-downs.

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

**1705.13.3 Cold-formed steel light-frame construction.**

For the seismic force-resisting systems of structures assigned to Seismic Design Category C, D, E or F, periodic special inspection shall be required for both:

1. Welding operations of elements of the seismic force-resisting system.
2. Screw attachment, bolting, anchoring and other fastening of elements of the seismic force-resisting system, including shear walls, braces, diaphragms, collectors (drag struts) and hold-downs.

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

1. The sheathing is gypsum board or fiberboard.
2. The sheathing is wood structural panel or steel sheets on only one side of the shear wall, shear panel or diaphragm assembly and the specified fastener spacing at the panel or sheet edge is more than 4 inches (102 mm) on center.

**1705.13.4 Designated seismic systems.** For structures assigned to Seismic Design Category C, D, E or F, the special inspector shall examine designated seismic systems requiring seismic qualification in accordance with Section 13.2.2 of ASCE 7 and verify that the label, anchorage and mounting conform to the certificate of compliance.

**1705.13.5 Architectural components.** Periodic special inspection is required for the erection and fastening of exterior cladding, interior and exterior nonbearing walls and interior and exterior veneer in structures assigned to Seismic Design Category D, E or F.

**Exception:** Periodic special inspection is not required for the following:

1. Exterior cladding, interior and exterior nonbearing walls and interior and exterior veneer 30 feet (9144 mm) or less in height above grade or walking surface.
2. Exterior cladding and interior and exterior veneer weighing 5 psf (0.24 kN/m<sup>2</sup>) or less.

3. Interior nonbearing walls weighing 15 psf (0.72 kN/m<sup>2</sup>) or less.

**1705.13.5.1 Access floors.** Periodic special inspection is required for the anchorage of access floors in structures assigned to Seismic Design Category D, E or F.

**1705.13.6 Plumbing, mechanical and electrical components.** Periodic special inspection of plumbing, mechanical and electrical components shall be required for the following:

1. Anchorage of electrical equipment for emergency and standby power systems in structures assigned to Seismic Design Category C, D, E or F.
2. Anchorage of other electrical equipment in structures assigned to Seismic Design Category E or F.
3. Installation and anchorage of piping systems designed to carry hazardous materials and their associated mechanical units in structures assigned to Seismic Design Category C, D, E or F.
4. Installation and anchorage of ductwork designed to carry hazardous materials in structures assigned to Seismic Design Category C, D, E or F.
5. Installation and anchorage of vibration isolation systems in structures assigned to Seismic Design Category C, D, E or F where the approved construction documents require a nominal clearance of 1/4 inch (6.4 mm) or less between the equipment support frame and restraint.
6. Installation of mechanical and electrical equipment, including duct work, piping systems and their structural supports, where automatic sprinkler systems are installed in structures assigned to Seismic Design Category C, D, E or F to verify one of the following:
  - 6.1. Minimum clearances have been provided as required by Section 13.2.3 ASCE/SEI 7.
  - 6.2. A nominal clearance of not less than 3 inches (76 mm) has been provided between automatic sprinkler system drops and sprigs and: structural members not used collectively or independently to support the sprinklers; equipment attached to the building structure; and other systems' piping.

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

**1705.13.7 Storage racks.** Steel storage racks and steel cantilevered storage racks that are 8 feet (2438 mm) in height or greater and assigned to Seismic Design Category D, E or F shall be provided with periodic special inspection as required by Table 1705.13.7.

**1705.13.8 Seismic isolation systems.** Periodic special inspection shall be provided for seismic isolation systems in seismically isolated structures assigned to Seismic Design Category B, C, D, E or F during the fabrication and installation of isolator units and energy dissipation devices.



**TABLE 1705.13.7  
REQUIRED INSPECTIONS OF STORAGE RACK SYSTEMS**

TYPE	CONTINUOUS INSPECTION	PERIODIC INSPECTION	REFERENCED STANDARD	CBC REFERENCE
1. Materials used, to verify compliance with one or more of the material test reports in accordance with the approved construction documents.	—	X	—	—
2. Fabricated storage rack elements.	—	X	—	Section 1704.2.5
3. Storage rack anchorage installation.	—	X	ANSI/MH16.1 Section 7.3.2	—
4. Completed storage rack system, to indicate compliance with the approved construction documents.	—	X	—	—

**1705.13.9 Cold-formed steel special bolted moment frames.** Periodic special inspection shall be provided for the installation of cold-formed steel special bolted moment frames in the seismic force-resisting systems of structures assigned to Seismic Design Category D, E or F.

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

**1705.14.1 Structural steel.** Testing for structural steel shall be in accordance with the quality assurance requirements of AISC 341 and the additional requirements in this Section. Nondestructive testing shall be performed by an approved agency and the written report, including the test results, shall be submitted for evaluation by the Superintendent of Building. The acceptance criteria for nondestructive testing shall be as required in AWS D1.1 as specified by the registered design professional.

Base metal thicker than 1.5 inches (38 mm), where subject to through-thickness weld shrinkage strains, shall be ultrasonically tested for discontinuities behind and adjacent to those welds after joint completion. Any material discontinuities shall be accepted or rejected on the basis of ASTM A435 or ASTM A898 (Level 1 criteria) and criteria as established by the registered design professional(s) in responsible charge, and the construction documents.

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

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

1. In buildings and structures assigned to Seismic Design Category B or C, nondestructive testing is not required for structural steel seismic force-resisting systems where the response modification coefficient, R, designated for "Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems" in ASCE 7, Table 12.2-1, has been used for design and detailing.

2. In structures assigned to Seismic Design Category D, E, or F, nondestructive testing is not required for structural steel seismic force-resisting systems where design and detailing in accordance with AISC 360 is permitted by ASCE 7, Table 15.4-1.

**1705.14.1.2 Structural steel elements.** Nondestructive testing of structural steel elements in the seismic force-resisting systems of buildings and structures assigned to Seismic Design Category B, C, D, E or F other than those covered in Section 1705.14.1.1, including struts, collectors, chords and foundation elements, shall be performed in accordance with the quality assurance requirements of AISC 341.

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

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

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

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

**1705.14.3 Designated seismic systems.** For structures assigned to Seismic Design Category C, D, E or F and with designated seismic systems that are subject to the requirements of Section 13.2.2 of ASCE 7 for certification, the registered design professional shall specify on the approved construction documents the requirements to be met by analysis, testing or experience data as specified therein. Certificates of compliance documenting that the requirements are met shall be submitted to the building official as specified in Section 1704.5.

**1705.14.3.1 Special seismic certification. [OSHDP 1R, 2 & 5]**

1. *Special seismic certification shall be required for life-safety components, such as emergency and standby power systems, mechanical smoke removal systems and fire sprinkler/fire protection systems.*
2. *Medical, mechanical and electrical equipment and components required for life support for patients shall have special seismic certification in accordance with Section 1705A.14.3.*

**1705.14.4 Seismic isolation systems.** Seismic isolation systems in seismically isolated structures assigned to Seismic Design Category B, C, D, E or F shall be tested in accordance with Section 17.8 of ASCE 7.

**[BF] 1705.15 Sprayed fire-resistant materials.** Special inspections and tests of sprayed fire-resistant materials applied to floor, roof and wall assemblies and structural members shall be performed in accordance with Sections 1705.15.1 through 1705.15.6. Special inspections shall be based on the fire-resistance design as designated in the approved construction documents. The tests set forth in this section shall be based on samplings from specific floor, roof and wall assemblies and structural members. Special inspections and tests shall be performed during construction with an additional visual inspection after the rough installation of electrical, automatic sprinkler, mechanical and plumbing systems and suspension systems for ceilings, and before concealment where applicable. The required sample size shall not exceed 110 percent of that specified by the referenced standards in Sections 1705.15.4.1 through 1705.15.4.9.

**[BF] 1705.15.1 Physical and visual tests.** The special inspections and tests shall include the following to demonstrate compliance with the listing and the fire-resistance rating:

1. Condition of substrates.
2. Thickness of application.
3. Density in pounds per cubic foot (kg/m<sup>3</sup>).
4. Bond strength adhesion/cohesion.
5. Condition of finished application.

**[BF] 1705.15.2 Structural member surface conditions.** The surfaces shall be prepared in accordance with the approved fire-resistance design and the written instructions of approved manufacturers. The prepared surface of structural members to be sprayed shall be inspected by the special inspector before the application of the sprayed fire-resistant material.

**[BF] 1705.15.3 Application.** The substrate shall have a minimum ambient temperature before and after application as specified in the written instructions of approved manufacturers. The area for application shall be ventilated during and after application as required by the written instructions of approved manufacturers.

**[BF] 1705.15.4 Thickness.** Not more than 10 percent of the thickness measurements of the sprayed fire-resistant materials applied to floor, roof and wall assemblies and structural members shall be less than the thickness required by the approved fire-resistance design, and none shall be less than the minimum allowable thickness required by Section 1705.15.4.1.

**[BF] 1705.15.4.1 Minimum allowable thickness.** For design thicknesses 1 inch (25 mm) or greater, the minimum allowable individual thickness shall be the design thickness minus 1/4 inch (6.4 mm). For design thicknesses less than 1 inch (25 mm), the minimum allowable individual thickness shall be the design thickness minus 25 percent. Thickness shall be determined in accordance with ASTM E605. Samples of the sprayed fire-resistant materials shall be selected in accordance with Sections 1705.15.4.2 and 1705.15.4.3.

**[BF] 1705.15.4.2 Floor, roof and wall assemblies.** The thickness of the sprayed fire-resistant material applied to floor, roof and wall assemblies shall be determined in accordance with ASTM E605, making not less than four measurements for each 1,000 square feet (93 m<sup>2</sup>) of the sprayed area, or portion thereof, in each story.

**[BF] 1705.15.4.3 Cellular decks.** Thickness measurements shall be selected from a square area, 12 inches by 12 inches (305 mm by 305 mm) in size. Not fewer than four measurements shall be made, located symmetrically within the square area.

**[BF] 1705.15.4.4 Fluted decks.** Thickness measurements shall be selected from a square area, 12 inches by 12 inches (305 mm by 305 mm) in size. Not fewer than four measurements shall be made, located symmetrically within the square area, including one each of the following: valley, crest and sides. The average of the measurements shall be reported.

**[BF] 1705.15.4.5 Structural members.** The thickness of the sprayed fire-resistant material applied to structural members shall be determined in accordance with ASTM E605. Thickness testing shall be performed on not less than 25 percent of the structural members on each floor.

**[BF] 1705.15.4.6 Beams and girders.** At beams and girders thickness measurements shall be made at nine

locations around the beam or girder at each end of a 12-inch (305 mm) length.

**[BF] 1705.15.4.7 Joists and trusses.** At joists and trusses, thickness measurements shall be made at seven locations around the joist or truss at each end of a 12-inch (305 mm) length.

**[BF] 1705.15.4.8 Wide-flanged columns.** At wide-flanged columns, thickness measurements shall be made at 12 locations around the column at each end of a 12-inch (305 mm) length.

**[BF] 1705.15.4.9 Hollow structural section and pipe columns.** At hollow structural section and pipe columns, thickness measurements shall be made at not fewer than four locations around the column at each end of a 12-inch (305 mm) length.

**[BF] 1705.15.5 Density.** The density of the sprayed fire-resistant material shall be not less than the density specified in the approved fire-resistance design. Density of the sprayed fire-resistant material shall be determined in accordance with ASTM E605. The test samples for determining the density of the sprayed fire-resistant materials shall be selected as follows:

1. From each floor, roof and wall assembly at the rate of not less than one sample for every 2,500 square feet (232 m<sup>2</sup>) or portion thereof of the sprayed area in each story.
2. From beams, girders, trusses and columns at the rate of not less than one sample for each type of structural member for each 2,500 square feet (232 m<sup>2</sup>) of floor area or portion thereof in each story.

**[BF] 1705.15.6 Bond strength.** The cohesive/adhesive bond strength of the cured sprayed fire-resistant material applied to floor, roof and wall assemblies and structural members shall be not less than 150 pounds per square foot (psf) (7.18 kN/m<sup>2</sup>). The cohesive/adhesive bond strength shall be determined in accordance with the field test specified in ASTM E736 by testing in-place samples of the sprayed fire-resistant material selected in accordance with Sections 1705.15.6.1 through 1705.15.6.3.

**[BF] 1705.15.6.1 Floor, roof and wall assemblies.** The test samples for determining the cohesive/adhesive bond strength of the sprayed fire-resistant materials shall be selected from each floor, roof and wall assembly at the rate of not less than one sample for every 2,500 square feet (232 m<sup>2</sup>) of the sprayed area, or portion thereof, in each story.

**[BF] 1705.15.6.2 Structural members.** The test samples for determining the cohesive/adhesive bond strength of the sprayed fire-resistant materials shall be selected from beams, girders, trusses, columns and other structural members at the rate of not less than one sample for each type of structural member for each 2,500 square feet (232 m<sup>2</sup>) of floor area or portion thereof in each story.

**[BF] 1705.15.6.3 Primer, paint and encapsulant bond tests.** Bond tests to qualify a primer, paint or encapsulant shall be conducted where the sprayed fire-

resistant material is applied to a primed, painted or encapsulated surface for which acceptable bond-strength performance between these coatings and the fire-resistant material has not been determined. A bonding agent approved by the SFRM manufacturer shall be applied to a primed, painted or encapsulated surface where the bond strengths are found to be less than required values.

**[BF] 1705.16 Mastic and intumescent fire-resistant coatings.** Special inspections and tests for mastic and intumescent fire-resistant coatings applied to structural elements and decks shall be performed in accordance with AWCI 12-B. Special inspections and tests shall be based on the fire-resistance design as designated in the approved construction documents. Special inspections and tests shall be performed during construction. Additional visual inspection shall be performed after the rough installation and, where applicable, prior to the concealment of electrical, automatic sprinkler, mechanical and plumbing systems.

**1705.17 Exterior insulation and finish systems (EIFS).** Special inspections shall be required for all EIFS applications.

#### Exceptions:

1. Special inspections shall not be required for EIFS applications installed over a water-resistive barrier with a means of draining moisture to the exterior.
2. Special inspections shall not be required for EIFS applications installed over masonry or concrete walls.

**1705.17.1 Water-resistive barrier coating.** A water-resistive barrier coating complying with ASTM E2570 requires special inspection of the water-resistive barrier coating where installed over a sheathing substrate.

**[BF] 1705.18 Fire-resistant penetrations and joints.** In high-rise buildings, in buildings assigned to *Risk Category* III or IV, or in fire areas containing Group R occupancies with an occupant load greater than 250, special inspections for through-penetrations, membrane penetration firestops, fire-resistant joint systems and perimeter fire containment systems that are tested and listed in accordance with Sections 714.4.1.2, 714.5.1.2, 715.3.1 and 715.4 shall be in accordance with Section 1705.18.1 or 1705.18.2.

**[OSHPD 1R, 2 & 5]** *Buildings assigned to all Risk Categories shall be subject to special inspections for fire-resistant penetrations and joints.*

**[BF] 1705.18.1 Penetration firestops.** Inspections of penetration firestop systems that are tested and listed in accordance with Sections 714.4.1.2 and 714.5.1.2 shall be conducted by an approved agency in accordance with ASTM E2174.

**1705.18.2 Fire-resistant joint systems.** Inspection of fire-resistant joint systems that are tested and listed in accordance with Sections 715.3 and 715.4 shall be conducted by an approved deputy inspector in accordance with ASTM E2393.

**1705.19 Special inspection for smoke control.** Smoke control systems shall be tested by a deputy inspector.

**[F] 1705.19.1 Testing scope.** The test scope shall be as follows:

1. During erection of ductwork and prior to concealment for the purposes of leakage testing and recording of device location.
2. Prior to occupancy and after sufficient completion for the purposes of pressure difference testing, flow measurements and detection and control verification.

**[F] 1705.19.2 Qualifications.** Approved agencies for smoke control testing shall have expertise in fire protection engineering, mechanical engineering and certification as air balancers.

**1705.20 Sealing of mass timber.** Periodic special inspections of sealants or adhesives shall be conducted where sealant or adhesive required by Section 703.7 is applied to mass timber building elements as designated in the approved construction documents.

## SECTION 1706 DESIGN STRENGTHS OF MATERIALS

**1706.1 Conformance to standards.** The design strengths and permissible stresses of any structural material that are identified by a manufacturer's designation as to manufacture and grade by mill tests, or the strength and stress grade is otherwise confirmed to the satisfaction of the Superintendent of Building shall conform to the specifications and methods of design of accepted engineering practice or the approved rules in the absence of applicable standards.

**1706.2 New materials.** For materials that are not specifically provided for in this code, the design strengths and permissible stresses shall be established by tests as provided for in Section 1707.

## SECTION 1707 ALTERNATIVE TEST PROCEDURE

**1707.1 General.** In the absence of approved rules or other approved standards, the building official shall make, or cause to be made, the necessary tests and investigations; or the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Sections 104.11 or 1.8.7, as applicable. The cost of all tests and other investigations required under the provisions of this code shall be borne by the owner or the owner's authorized agent.

**[BSC]** *In the absence of approved rules or other approved standards, the building official shall make, or cause to be made, the necessary tests and investigations; or the building official shall accept duly authenticated reports from approved agencies in respect to the quality and manner of use of new materials or assemblies as provided for in Section 1.2.1, Chapter 1, Division I. The cost of all tests and other investigations required under the provisions of this code shall be borne by the applicant.*

## SECTION 1708 IN-SITU LOAD TESTS

**1708.1 General.** Whenever there is a reasonable doubt as to the stability or load-bearing capacity of a completed building, structure or portion thereof for the expected loads, an engineering assessment shall be required. The engineering assessment shall involve either a structural analysis or an in-situ load test, or both. The structural analysis shall be based on actual material properties and other as-built conditions that affect stability or load-bearing capacity, and shall be conducted in accordance with the applicable design standard. The in-situ load tests shall be conducted in accordance with Section 1708.2. If the building, structure or portion thereof is found to have inadequate stability or load-bearing capacity for the expected loads, modifications to ensure structural adequacy or the removal of the inadequate construction shall be required.

**1708.2 In-situ load tests.** In-situ load tests shall be conducted in accordance with Section 1708.2.1 or 1708.2.2 and shall be supervised by a registered design professional. The test shall simulate the applicable loading conditions specified in Chapter 16 as necessary to address the concerns regarding structural stability of the building, structure or portion thereof.

**1708.2.1 Load test procedure specified.** Where a referenced material standard contains an applicable load test procedure and acceptance criteria, the test procedure and acceptance criteria in the standard shall apply. In the absence of specific load factors or acceptance criteria, the load factors and acceptance criteria in Section 1708.2.2 shall apply.

**1708.2.2 Load test procedure not specified.** In the absence of applicable load test procedures contained within a material standard referenced by this code or acceptance criteria for a specific material or method of construction, such existing structure shall be subjected to an approved test procedure developed by a registered design professional that simulates applicable loading and deformation conditions. For components that are not a part of the seismic force-resisting system, at a minimum the test load shall be equal to the specified factored design loads. For materials such as wood that have strengths that are dependent on load duration, the test load shall be adjusted to account for the difference in load duration of the test compared to the expected duration of the design loads being considered. For statically loaded components, the test load shall be left in place for a period of 24 hours. For components that carry dynamic loads (for example, machine supports or fall arrest anchors), the load shall be left in place for a period consistent with the component's actual function. The structure shall be considered to have successfully met the test requirements where the following criteria are satisfied:

1. Under the design load, the deflection shall not exceed the limitations specified in Section 1604.3.
2. Within 24 hours after removal of the test load, the structure shall have recovered not less than 75 percent of the maximum deflection.

3. During and immediately after the test, the structure shall not show evidence of failure.

## SECTION 1709 PRECONSTRUCTION LOAD TESTS

**1709.1 General.** Where proposed construction is not capable of being designed by approved engineering analysis, or where proposed construction design method does not comply with the applicable material design standard, the system of construction or the structural unit and the connections shall be subjected to the tests prescribed in Section 1709. The building official shall accept certified reports of such tests conducted by an approved testing agency, provided that such tests meet the requirements of this code and approved procedures.

**1709.2 Load test procedures specified.** Where specific load test procedures, load factors and acceptance criteria are included in the applicable referenced standards, such test procedures, load factors and acceptance criteria shall apply. In the absence of specific test procedures, load factors or acceptance criteria, the corresponding provisions in Section 1709.3 shall apply.

**1709.3 Load test procedures not specified.** Where load test procedures are not specified in the applicable referenced standards, the load-bearing and deformation capacity of structural components and assemblies shall be determined on the basis of a test procedure developed by a registered design professional that simulates applicable loading and deformation conditions. For components and assemblies that are not a part of the seismic force-resisting system, the test shall be as specified in Section 1709.3.1. Load tests shall simulate the applicable loading conditions specified in Chapter 16.

**1709.3.1 Test procedure.** The test assembly shall be subjected to an increasing superimposed load equal to not less than two times the superimposed design load. The test load shall be left in place for a period of 24 hours. The tested assembly shall be considered to have successfully met the test requirements if the assembly recovers not less than 75 percent of the maximum deflection within 24 hours after the removal of the test load. The test assembly shall then be reloaded and subjected to an increasing superimposed load until either structural failure occurs or the superimposed load is equal to two and one-half times the load at which the deflection limitations specified in Section 1709.3.2 were reached, or the load is equal to two and one-half times the superimposed design load. In the case of structural components and assemblies for which deflection limitations are not specified in Section 1709.3.2, the test specimen shall be subjected to an increasing superimposed load until structural failure occurs or the load is equal to two and one-half times the desired superimposed design load. The allowable superimposed design load shall be taken as the least of:

1. The load at the deflection limitation given in Section 1709.3.2.
2. The failure load divided by 2.5.
3. The maximum load applied divided by 2.5.

**1709.3.2 Deflection.** The deflection of structural members under the design load shall not exceed the limitations in Section 1604.3.

**1709.4 Wall and partition assemblies.** Load-bearing wall and partition assemblies shall sustain the test load both with and without window framing. The test load shall include all design load components. Wall and partition assemblies shall be tested both with and without door and window framing.

**1709.5 Exterior window and door assemblies.** The design pressure rating of exterior windows and doors in buildings shall be determined in accordance with Section 1709.5.1 or 1709.5.2. For exterior windows and doors tested in accordance with Section 1709.5.1 or 1709.5.2, required design wind pressures determined from ASCE 7 shall be permitted to be converted to allowable stress design by multiplying by 0.6.

**Exception:** Structural wind load design pressures for window or door assemblies other than the size tested in accordance with Section 1709.5.1 or 1709.5.2 shall be permitted to be different than the design value of the tested assembly, provided that such pressures are determined by accepted engineering analysis or validated by an additional test of the window or door assembly to the alternative allowable design pressure in accordance with Section 1709.5.2. Components of the alternate size assembly shall be the same as the tested or labeled assembly. Where engineering analysis is used, it shall be performed in accordance with the analysis procedures of AAMA 2502.

**1709.5.1 Exterior windows and doors.** Exterior windows and sliding doors shall be tested and labeled as conforming to AAMA/WDMA/CSA101/I.S.2/A440. The label shall state the name of the manufacturer, the approved labeling agency and the product designation as specified in AAMA/WDMA/CSA101/I.S.2/A440. Exterior side-hinged doors shall be tested and labeled as conforming to AAMA/WDMA/CSA101/I.S.2/A440 or comply with Section 1709.5.2. Products tested and labeled as conforming to AAMA/WDMA/CSA 101/I.S.2/A440 shall not be subject to the requirements of Sections 2403.2 and 2403.3.

**1709.5.2 Exterior windows and door assemblies not provided for in Section 1709.5.1.** Exterior window and door assemblies shall be tested in accordance with ASTM E330. Exterior window and door assemblies containing glass shall comply with Section 2403. The design pressure for testing shall be calculated in accordance with Chapter 16. Each assembly shall be tested for 10 seconds at a load equal to 1.5 times the design pressure.

**1709.5.2.1 Garage doors and rolling doors.** Garage doors and rolling doors shall be tested in accordance with either ASTM E330 or ANSI/DASMA 108, and shall meet the pass/fail criteria of ANSI/DASMA 108. Garage doors and rolling doors shall be labeled with a permanent label identifying the door manufacturer, the door model/series number, the positive and negative design wind pressure rating, the installation instruction drawing reference number, and the applicable test standard.

**1709.5.3 Windborne debris protection.** Protection of exterior glazed openings in buildings located in windborne debris regions shall be in accordance with Section 1609.2.

**1709.5.3.1 Impact protective systems testing and labeling.** Impact protective systems shall be tested for impact resistance by an approved independent laboratory for compliance with ASTM E1886 and ASTM E1996 and for design wind pressure for compliance with ASTM E330. Required design wind pressures shall be determined in accordance with ASCE 7, and for the purposes of this section, multiplied by 0.6 to convert to allowable stress design.

Impact protective systems shall have a permanent label applied in accordance with Section 1703.5.4, identifying the manufacturer, product designation, performance characteristics, and approved inspection agency.

**1709.6 Skylights and sloped glazing.** Skylights and sloped glazing shall comply with the requirements of Chapter 24.

**1709.7 Test specimens.** Test specimens and construction shall be representative of the materials, workmanship and details normally used in practice. The properties of the materials used to construct the test assembly shall be determined on the basis of tests on samples taken from the load assembly or on representative samples of the materials used to construct the load test assembly. Required tests shall be conducted or witnessed by an approved agency.

## SECTION 1710 CERTIFIED SECURITY BAR INSTALLER

**1710.1 General.** A certified security bar installer may certify to the Department that any bars, grilles, grates, security roll-down shutters, or similar devices installed on required emergency escape windows or doors meet the requirements of Section 6304.3.

The Department may allow the use of a certified installer if:

1. The certified installer obtains a Certificate of Registration in accordance with the provisions of this section.
2. The certified installer files with the Department a Certificate of Compliance for each dwelling unit for which certification is being made. The Certificate of Compliance shall be on a form provided by the Department and shall be signed by the property owner and the certified installer.
3. The Certificate of Compliance processing fee is paid in accordance with Section 107.7.
4. The certified installer files the Certificate of Compliance with the Department within 15 days after completion of the installation.

**1710.2 Registration.** A certified installer shall obtain a Certificate of Registration from the Department.

### 1710.3 Application.

**1710.3.1 Forms.** Application for a certified security bar installer Certificate of Registration shall be made on a form furnished by the Department.

**1710.3.2 Information necessary.** The application shall bear the name and address of the applicant and, if a firm, partnership or corporation, the names of the principal officers. The application shall carry other information deemed necessary by the Department.

**1710.3.3 Verification.** The applicant shall declare that the information contained in the application is true and correct.

**1710.3.4 Fees.** The application shall be accompanied by an examination fee of \$125.00.

### 1710.4 Examination.

**1710.4.1 Examination required.** Before any person shall be issued a Certificate of Registration, the applicant, who must be an officer in the case of a firm, partnership or corporation, shall have successfully passed the examination required for the issuance of the certificate within ninety (90) days preceding the date of the issuance.

**1710.4.2 Experience required.** To be eligible for the examination for a Registration Certificate, the applicant shall have a valid California State Contractor's License in an appropriate specialty and a valid City Business Tax Certificate.

**1710.4.3 Board of examiners.** The Superintendent of Building or a Board of Examiners composed of qualified person(s) appointed by the Superintendent of Building shall conduct examinations.

The results of every examination shall be subject to the approval of the Superintendent.

Each examiner shall serve at the pleasure of the Superintendent of Building and shall serve for a period of one year unless reappointed by the Superintendent of Building.

**1710.4.4 Scope of examination.** The examination shall, in the judgment of the Board of Examiners, fairly determine the ability of the applicant to properly perform the work, which he or she would be authorized to do by the certificate requested, and may include the following:

1. A written test.
2. Practical tests as may be required.
3. An oral interview as may be required.
4. Other tests as may be required by the Board of Examiners.

**1710.4.5 Time of examination.** The applicant shall be examined as soon as practicable after filing an application.

**1710.4.6 Rules and regulations.** The Department shall have the authority to establish rules and regulations for the conduct of examinations.

**1710.4.7 Fitness of applicant.** Any applicant for a certificate may be required to submit satisfactory proof of his or her fitness to carry out the intent of this Code.

**1710.4.8 Failure to pass.** Every applicant who fails to pass an examination shall not be eligible for another examination until four (4) weeks after taking the previous examination. Any applicant who fails to pass on the third try shall not be eligible again until six (6) months after taking the previous examination.

**1710.5 Issuance of certificates.**

**1710.5.1.** Upon the payment of a \$90 fee, the Department may issue a Certificate of Registration to every applicant who passes the required examination for a certified security bar installer.

**1710.5.2 Renewal of certificates.** Expired certificates may be renewed at any time within twelve (12) months following the date of expiration. However, after the first month, the renewal fee shall be increased by 10 percent for each subsequent month. After a certificate has been expired for one year, it may not be renewed; however, an applicant may apply for a new certificate at that time.

**1710.6 Exhibition of certificate.**

**1710.6.1.** Every person having a fixed place of business shall keep his or her Certificate of Registration posted in some conspicuous location at his or her place of business during the time the certificate is in force.

**1710.6.2.** Every person not having a fixed place of business shall carry his or her Certificate of Registration with him or her at all times while doing any work pursuant to this certificate.

**1710.7 Revocation of certificate.** Any certificate may be suspended or revoked in accordance with the provisions of Article 8, Chapter IX of the LAMC.

**1710.8 Transfer of certificate.** No certificate shall be transferable. A Certificate of Registration issued to a firm, partnership or corporation may not be transferred. The dissolution of a firm, partnership or corporation renders the certificate void.

## SECTION 1711 PREFABRICATED CONSTRUCTION

**1711.1 General.**

**1711.1.1 Purpose.** The purpose of this section is to regulate materials and establish methods of safe construction where any structure or portion of the structure is wholly or partially prefabricated.

**1711.1.2 Scope.** Unless otherwise specifically stated in this section, all prefabricated construction and all materials used in the construction shall conform to all the requirements of this Code. (See LAMC Subsection 91.104.2.6.)

**1711.1.3 Definition.**

**PREFABRICATED ASSEMBLY.** A structural unit, the integral parts of which have been built up or assembled prior to incorporation in the building.

**1711.2 Tests of materials.** Every approval of a material not specifically mentioned in this Code shall incorporate as a proviso, the kind and number of tests to be made during prefabrication.

**1711.3 Tests of assemblies.** The Superintendent of Building may require special tests to be made on assemblies to determine their durability and weather resistance.

**1711.4 Reserved.****1711.5 Reserved.****1711.6 Certificate and inspection.**

**1711.6.1 Materials.** Materials and the assembly of materials shall be inspected to determine compliance with this Code. Every material shall be graded, marked or labeled where required elsewhere in this Code.

**1711.6.2 Certificate.** A Certificate of Approval shall be furnished with every prefabricated assembly, except where the assembly is readily accessible to inspection at the site. The Certificate of Approval shall certify that the assembly in question has been inspected and meets all the requirements of this Code. When mechanical equipment is installed so that it cannot be inspected at the site, the Certificate of Approval shall certify that the equipment complies with all applicable laws and regulations.

**1711.6.3 Certifying agency.** To be acceptable under this Code, every Certificate of Approval shall be made by an approved testing agency.

**1711.6.4 Field erection.** Placement of prefabricated assemblies at the building site shall be inspected by the Department to determine compliance with this Code.

**1711.6.5 Continuous inspection.** If continuous inspection is required for certain materials where construction takes place on the site, it shall also be required where the same materials are used in prefabricated construction.

**Exception:** Continuous inspection will not be required during prefabrication if the approved testing agency certifies to the construction and furnishes evidence of compliance.





# CHAPTER 18

## SOILS AND FOUNDATIONS

### User notes:

**About this chapter:** Chapter 18 provides criteria for geotechnical and structural considerations in the selection, design and installation of foundation systems to support the loads imposed by the structure above. This chapter includes requirements for soils investigation and site preparation for receiving a foundation, including the load-bearing values for soils and protection for the foundation from frost and water intrusion. Section 1808 addresses the basic requirements for all foundation types while subsequent sections address foundation requirements that are specific to shallow foundations and deep foundations.

**Code development reminder:** Code change proposals to this chapter will be considered by the IBC–Structural Code Development Committee during the 2022 (Group B) Code Development Cycle.

### SECTION 1801 GENERAL

**1801.1 Scope.** The provisions of this Chapter shall apply to building and foundation systems in those areas not subject to scour or water pressure by wind and wave action. Buildings and foundations subject to those scour or water pressure loads shall be designed in accordance with Chapter 16 of this Code.

Requirements governing grading and earthwork construction, including excavation and fills, are set forth in Chapter 70 of this Code.

Hillside buildings (buildings constructed on slopes steeper than 1 unit vertical in 3 units horizontal [33.3%] slope) shall comply with Section 1613.9 (seismic design provisions for hillside buildings) and this Chapter.

**1801.1.1 Application.** The scope of application of Chapter 18 is as follows:

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

**1801.1.2 Amendments in this chapter.** OSHPD adopts this chapter and all amendments.

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

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

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

[OSHPD 2] – For applications listed in Section 1.10.2.

[OSHPD 5] – For applications listed in Section 1.10.5.

### SECTION 1802 DESIGN BASIS

**1802.1 General.** Allowable bearing pressures, allowable stresses and design formulas provided in this chapter shall be

used with the allowable stress design load combinations specified in ASCE 7, Section 2.4 or the alternative allowable stress design load combinations of Section 1605.2. The quality and design of materials used structurally in excavations and foundations shall comply with the requirements specified in Chapters 16, 19, 21, 22 and 23. Excavations and fills shall comply with Chapter 33.

**[HCD 1]** For limited-density owner-built rural dwellings, pier foundations, stone masonry footings and foundations, pressure-treated lumber, poles or equivalent foundation materials or designs may be used, provided that the bearing is sufficient for the purpose intended.

### SECTION 1803 GEOTECHNICAL INVESTIGATIONS

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

**1803.1.1 General and where required for applications listed in Section 1.8.2.1.1 regulated by the Department of Housing and Community Development.** [HCD 1] Foundation and soils investigations shall be conducted in conformance with Health and Safety Code Sections 17953 through 17957 as summarized below.

**1803.1.1.1 Preliminary soil report.** Each city, county, or city and county shall enact an ordinance which requires a preliminary soil report, prepared by a civil engineer who is registered by the state. The report shall be based upon adequate test borings or excavations, of every subdivision, where a tentative and final map is required pursuant to Section 66426 of the Government Code.

The preliminary soil report may be waived if the building department of the city, county, or city and county, or other enforcement agency charged with the administration and enforcement of the provisions of Section 1803.1.1, shall determine that, due to the knowledge such department has as to the soil qualities of the soil of the subdivision or lot, no preliminary analysis is necessary.

**1803.1.1.2 Soil investigation by lot, necessity, preparation and recommendations.** If the preliminary soil report indicates the presence of critically expansive soils or other soil problems which, if not corrected, would lead to structural defects, such ordinance shall require a soil investigation of each lot in the subdivision.

The soil investigation shall be prepared by a civil engineer who is registered in this state. It shall recommend corrective action which is likely to prevent structural damage to each dwelling proposed to be constructed on the expansive soil.

**1803.1.1.3 Approval, building permit conditions, appeal.** The building department of each city, county, or city and county, or other enforcement agency charged with the administration and enforcement of the provisions of Section 1803.1.1, shall approve the soil investigation if it determines that the recommended action is likely to prevent structural damage to each dwelling to be constructed. As a condition to the building permit, the ordinance shall require that the approved recommended action be incorporated in the construction of each dwelling. Appeal from such determination shall be to the local appeals board.

**1803.1.1.4 Liability.** A city, county, city and county, or other enforcement agency charged with the administration and enforcement of the provisions of Section 1803.1.1, is not liable for any injury which arises out of any act or omission of the city, county, city and county, other enforcement agency, or a public employee or any other person under Section 1803.1.1.

**1803.1.1.5 Alternate procedures.** The governing body of any city, county, or city and county may enact an ordinance prescribing an alternate procedure which is equal to or more restrictive than the procedure specified in Section 1803.1.1.

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

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

**[OSHPD 2]** Geotechnical reports are not required for one-story, wood-frame and light-steel-frame buildings of Type V construction and 4,000 square feet (371 m<sup>2</sup>) or less in floor area, not located within Earthquake Fault Zones or Seismic Hazard Zones as shown in the most recently

published maps from the California Geological Survey (CGS). Allowable foundation and lateral soil pressure values may be determined from Table 1806.2.

**1803.3 Basis of investigation.** Soil classification shall be based on observation and any necessary tests of the materials disclosed by borings, test pits or other subsurface exploration made in appropriate locations. Additional studies shall be made as necessary to evaluate slope stability, soil strength, position and adequacy of load-bearing soils, the effect of moisture variation on soil-bearing capacity, compressibility, liquefaction and expansiveness.

**1803.3.1 Scope of investigation.** The scope of the geotechnical investigation including the number and types of borings or soundings, the equipment used to drill or sample, the in-situ testing equipment and the laboratory testing program shall be determined by a registered design professional.

**[OSHPD 1R, 2 & 5]** There shall not be less than one boring or exploration shaft for each 5,000 square feet (465 m<sup>2</sup>) of building area at the foundation level with a minimum of two provided for any one building. A boring may be considered to reflect subsurface conditions relevant to more than one building, subject to the approval of the enforcement agency.

Borings shall be of sufficient size to permit visual examination of the soil in place or, in lieu thereof, cores shall be taken.

Borings shall be of sufficient depth and size to adequately characterize subsurface conditions.

**Exception:** Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light-steel frame construction.

**1803.4 Qualified representative.** The investigation procedure and apparatus shall be in accordance with generally accepted engineering practice. The registered design professional shall have a fully qualified representative on site during all boring or sampling operations.

**1803.5 Investigated conditions.** Geotechnical investigations shall be conducted as indicated in Sections 1803.5.1 through 1803.5.12.

**1803.5.1 Classification.** Soil materials shall be classified in accordance with ASTM D2487.

**1803.5.2 Questionable soil.** Where the classification, strength or compressibility of the soil is in doubt or where a load-bearing value superior to that specified in this code is claimed, the building official shall be permitted to require that a geotechnical investigation be conducted.

**1803.5.3 Expansive soil.** In areas likely to have expansive soil, the building official shall require soil tests to determine where such soils do exist.

Soils meeting all four of the following provisions shall be considered to be expansive, except that tests to show compliance with Items 1, 2 and 3 shall not be required if the test prescribed in Item 4 is conducted:

1. Plasticity index (PI) of 15 or greater, determined in accordance with ASTM D4318.

2. More than 10 percent of the soil particles pass a No.200 sieve (75  $\mu$ m), determined in accordance with ASTM D422.
3. More than 10 percent of the soil particles are less than 5 micrometers in size, determined in accordance with ASTM D422.
4. Expansion index greater than 20, determined in accordance with ASTM D4829.

**1803.5.4 Ground-water table.** A subsurface soil investigation shall be performed to determine whether the existing ground-water table is above or within 5 feet (1524 mm) below the elevation of the lowest floor level where such floor is located below the finished ground level adjacent to the foundation.

**Exception:** *[OSHPD 1R, 2 & 5] Not permitted by OSHPD.* A subsurface soil investigation to determine the location of the ground-water table shall not be required where waterproofing is provided in accordance with Section 1805.

**1803.5.5 Deep foundations.** Where deep foundations will be used, a geotechnical investigation shall be conducted and shall include all of the following, unless sufficient data on which to base the design and installation is otherwise available:

1. Recommended deep foundation types and installed capacities.
2. Recommended center-to-center spacing of deep foundation elements.
3. Driving criteria.
4. Installation procedures.
5. Field inspection and reporting procedures (to include procedures for verification of the installed bearing capacity where required).
6. Load test requirements.
7. Suitability of deep foundation materials for the intended environment.
8. Designation of bearing stratum or strata.
9. Reductions for group action, where necessary.

**1803.5.6 Rock strata.** Where subsurface explorations at the project site indicate variations or doubtful characteristics in the structure of the rock upon which foundations are to be constructed, a sufficient number of borings shall be made to a depth of not less than 10 feet (3048 mm) below the level of the foundations and to a depth that would allow investigation of any unsupported bedding planes or any other rock discontinuities that could influence the foundation stability to provide assurance of the soundness of the foundation bed and its load-bearing capacity.

**1803.5.7 Excavation near foundations.** Where excavation will reduce support from any foundation, a registered design professional shall prepare an assessment of the structure as determined from examination of the structure, available design documents, available subsurface data, and, if necessary, excavation of test pits. The registered design professional shall determine the requirements for support and protection of any existing foundation and

prepare site-specific plans, details and sequence of work for submission. Such support shall be provided by underpinning, bracing, excavation retention systems, or by other means acceptable to the building official.

**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, 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. Total and differential settlement.

L  
A  
A  
A  
A  
A  
A  
A  
A  
A  
A  
L

4. Surface displacement due to faulting or seismically induced lateral spreading or lateral flow.

**1803.5.12 Seismic Design Categories D through F.** For structures assigned to Seismic Design Category D, E or F, the geotechnical investigation required by Section 1803.5.11 shall include all of the following as applicable:

1. The determination of dynamic seismic lateral earth pressures on foundation walls and retaining walls supporting more than 6 feet (1.83 m) of backfill height due to design earthquake ground motions.
2. The potential for liquefaction and soil strength loss evaluated for site peak ground acceleration, earthquake magnitude and source characteristics consistent with the maximum considered earthquake ground motions. Peak ground acceleration shall be determined based on one of the following:
  - 2.1. A site-specific study in accordance with Chapter 21 of ASCE 7.
  - 2.2. In accordance with Section 11.8.3 of ASCE 7.
3. An assessment of potential consequences of liquefaction and soil strength loss including, but not limited to, the following:
  - 3.1. Estimation of total and differential settlement.
  - 3.2. Lateral soil movement.
  - 3.3. Lateral soil loads on foundations.
  - 3.4. Reduction in foundation soil-bearing capacity and lateral soil reaction.
  - 3.5. Soil downdrag and reduction in axial and lateral soil reaction for pile foundations.
  - 3.6. Increases in soil lateral pressures on retaining walls.
  - 3.7. Flotation of buried structures.
4. Discussion of mitigation measures such as, but not limited to, the following:
  - 4.1. Selection of appropriate foundation type and depths.
  - 4.2. Selection of appropriate structural systems to accommodate anticipated displacements and forces.
  - 4.3. Ground stabilization.
  - 4.4. 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 permit applicant 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 1R, 2 & 5]** *The report shall consider the effects of seismic hazard in accordance with Section 1803.7.*

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

**Exceptions:**

1. *Reports are not required for one-story, wood-frame and light-steel-frame buildings of Type V skilled nursing or intermediate care facilities construction and 4,000 square feet (371 m<sup>2</sup>) 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.*
2. *A previous report for a specific site may be resubmitted, provided that a reevaluation is made and the report is found to be currently appropriate.*

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

*The preparation of the geohazard report shall consider the most recent CGS Note 48; Checklist for the Review of Engineering Geology and Seismology Reports for California Public School, Hospitals and Essential Services Buildings. In addition, the most recent version of CGS Special Publication 42, 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,*

**1805.3.2 Walls.** Walls required to be waterproofed shall be of concrete or masonry and shall be designed and constructed to withstand the hydrostatic pressures and other lateral loads to which the walls will be subjected.

Waterproofing shall be applied from the bottom of the wall to not less than 12 inches (305 mm) above the maximum elevation of the ground-water table. The remainder of the wall shall be dampproofed in accordance with Section 1805.2.2. Waterproofing shall consist of two-ply hot-mopped felts, not less than 6-mil (0.006 inch; 0.152 mm) polyvinyl chloride, 40-mil (0.040 inch; 1.02 mm) polymer-modified asphalt, 6-mil (0.006 inch; 0.152 mm) polyethylene or other approved methods or materials capable of bridging nonstructural cracks. Joints in the membrane shall be lapped and sealed in accordance with the manufacturer's installation instructions.

**1805.3.2.1 Surface preparation of walls.** Prior to the application of waterproofing materials on concrete or masonry walls, the walls shall be prepared in accordance with Section 1805.2.2.1.

**1805.3.3 Joints and penetrations.** Joints in walls and floors, joints between the wall and floor and penetrations of the wall and floor shall be made watertight utilizing approved methods and materials.

**1805.4 Subsoil drainage system.** Where a hydrostatic pressure condition does not exist, dampproofing shall be provided and a base shall be installed under the floor and a drain installed around the foundation perimeter. A subsoil drainage system designed and constructed in accordance with Section 1805.1.3 shall be deemed adequate for lowering the ground-water table.

**1805.4.1 Floor base course.** Floors of basements, except as provided for in Section 1805.1.1, shall be placed over a floor base course not less than 4 inches (102 mm) in thickness that consists of gravel or crushed stone containing not more than 10 percent of material that passes through a No. 4 (4.75 mm) sieve.

**Exceptions:**

1. Where a site is located in well-drained gravel or sand/gravel mixture soils, a floor base course is not required.
2. *[HCD 1] When a capillary break is installed in accordance with the California Green Building Standards Code (CALGreen), Chapter 4, Division 4.5.*

**1805.4.2 Foundation drain.** A drain shall be placed around the perimeter of a foundation that consists of gravel or crushed stone containing not more than 10-percent material that passes through a No. 4 (4.75 mm) sieve. The drain shall extend not less than 12 inches (305 mm) beyond the outside edge of the footing. The thickness shall be such that the bottom of the drain is not higher than the bottom of the base under the floor, and that the top of the drain is not less than 6 inches (152 mm) above the top of the footing. The top of the drain shall be covered with an approved filter membrane material. Where a drain tile or perforated pipe is used, the invert of the pipe or tile shall not be higher than the floor elevation. The top of

joints or the top of perforations shall be protected with an approved filter membrane material. The pipe or tile shall be placed on not less than 2 inches (51 mm) of gravel or crushed stone complying with Section 1805.4.1, and shall be covered with not less than 6 inches (152 mm) of the same material.

**1805.4.3 Drainage discharge.** The floor base and foundation perimeter drain shall discharge by gravity or mechanical means into an approved drainage system that complies with the *City of Los Angeles Plumbing Code*.

## SECTION 1806 PRESUMPTIVE LOAD-BEARING VALUES OF SOILS

**1806.1 Load combinations.** The presumptive load-bearing values provided in Table 1806.2 shall be used with the allowable stress design load combinations specified in ASCE 7, Section 2.4 or the alternative allowable stress design load combinations of Section 1605.2. The values of vertical foundation pressure and lateral bearing pressure given in Table 1806.2 shall be permitted to be increased by one-third where used with the alternative allowable stress design load combinations of Section 1605.2 that include wind or earthquake loads.

**1806.2 Presumptive load-bearing values.** The load-bearing values used in design for supporting soils near the surface shall not exceed the values specified in Table 1806.2 unless data to substantiate the use of higher values are submitted and approved. Where the Department has reason to doubt the classification, strength or compressibility of the soil, the requirements of Section 1803.5.2 shall be satisfied.

Presumptive load-bearing values shall apply to materials with similar physical characteristics and dispositions.

Mud, organic silt, organic clays, peat or uncertified fill shall not be assumed to have a presumptive load-bearing capacity.

**1806.3 Lateral load resistance.** Where the presumptive values of Table 1806.2 are used to determine resistance to lateral loads, the calculations shall be in accordance with Sections 1806.3.1 through 1806.3.4.

**1806.3.1 Combined resistance.** The total resistance to lateral loads shall be permitted to be determined by combining the values derived from the lateral bearing pressure and the lateral sliding resistance specified in Table 1806.2.

**1806.3.2 Lateral sliding resistance limit.** For clay, sandy clay, silty clay, clayey silt, silt and sandy silt, the lateral sliding resistance shall not exceed one-half the dead load.

**1806.3.3 Increase for depth.** The lateral bearing pressures specified in Table 1806.2 shall be permitted to be increased by the tabular value for each additional foot (305 mm) of depth to a value that is not greater than 15 times the tabular value.

**1806.3.4 Increase for poles.** Isolated poles for uses such as flagpoles or signs and poles used to support buildings that are not adversely affected by a  $\frac{1}{2}$ -inch (12.7 mm)

**TABLE 1806.2  
PRESUMPTIVE LOAD-BEARING VALUES**

CLASS OF MATERIALS	VERTICAL FOUNDATION PRESSURE (psf)	LATERAL BEARING PRESSURE (psf/ft below natural grade)	LATERAL SLIDING RESISTANCE	
			Coefficient of friction <sup>a</sup>	Cohesion (psf) <sup>b</sup>
1. Crystalline bedrock	12,000	1,200	0.70	—
2. Sedimentary and foliated rock	4,000	400	0.35	—
3. Sandy gravel and gravel (GW and GP)	3,000	200	0.35	—
4. Sand, silty sand, clayey sand, silty gravel and clayey gravel (SW, SP, SM, SC, GM and GC)	2,000	150	0.25	—
5. Clay, sandy clay, silty clay, clayey silt, silt and sandy silt (CL, ML, MH and CH)	1,500	100	—	130

For SI: 1 pound per square foot = 0.0479kPa, 1 pound per square foot per foot = 0.157 kPa/m.

a. Coefficient to be multiplied by the dead load.

b. Cohesion value to be multiplied by the contact area, as limited by Section 1806.3.2.

motion at the ground surface due to short-term lateral loads shall be permitted to be designed using lateral bearing pressures equal to two times the tabular values.

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

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

**1807.1.1 Design lateral soil loads.** Foundation walls shall be designed for the lateral soil loads set forth in Section 1610.

**1807.1.2 Unbalanced backfill height.** Unbalanced backfill height is the difference in height between the exterior finish ground level and the lower of the top of the concrete footing that supports the foundation wall or the interior finish ground level. Where an interior concrete slab on grade is provided and is in contact with the interior surface of the foundation wall, the unbalanced backfill height shall be permitted to be measured from the exterior finish ground level to the top of the interior concrete slab.

**1807.1.3 Rubble stone foundation walls.** *[OSHPD 1R, 2 & 5] Not permitted by OSHPD.* Foundation walls of rough or random rubble stone shall be not less than 16 inches (406 mm) thick. Rubble stone shall not be used for foundation walls of structures assigned to Seismic Design Category C, D, E or F.

**1807.1.4 Permanent wood foundation systems.** Permanent wood foundation systems shall be designed and installed in accordance with AF & PA PWF and as otherwise approved by the Department. Lumber and plywood shall be treated in accordance with AWP A U1 (Commodity Specification A, Use Category 4B and Section 5.2) and shall be identified in accordance with Section

2303.1.9.1. Permanent wood foundation systems shall not be used for structures assigned to Seismic Design Category D, E or F.

**Exception:** Accessory buildings not used for human occupancy and less than 120 square feet (11.1 m<sup>2</sup>) in area may be supported on treated wood mud sills.

**1807.1.5 Concrete and masonry foundation walls.** Concrete and masonry foundation walls shall be designed in accordance with Chapter 19 or 21, as applicable.

**Exception:** *[OSHPD 1R, 2 & 5] Not permitted by OSHPD.* Concrete and masonry foundation walls shall be permitted to be designed and constructed in accordance with Section 1807.1.6.

**1807.1.6 Prescriptive design of concrete and masonry foundation walls.** Concrete and masonry foundation walls that are laterally supported at the top and bottom shall be permitted to be designed and constructed in accordance with this section. Prescriptive design of foundation walls shall not be used for structures assigned to Seismic Design Category D, E or F.

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

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

1. The thickness shall comply with the requirements of Table 1807.1.6.2.
2. The size and spacing of vertical reinforcement shown in Table 1807.1.6.2 are based on the use of reinforcement with a minimum yield strength of 60,000 pounds per square inch (psi) (414 MPa). Vertical reinforcement with a minimum yield strength of 40,000 psi (276 MPa) or 50,000

**1808.5 Shifting or moving soils.** Where it is known that the shallow subsoils are of a shifting or moving character, foundations shall be carried to a sufficient depth to ensure stability.

**1808.6 Design for expansive soils.** Foundations for buildings and structures founded on expansive soils shall be designed in accordance with Section 1808.6.1 or 1808.6.2.

**Exceptions:** Foundation design need not comply with Section 1808.6.1 or 1808.6.2 where one of the following conditions is satisfied:

1. The soil is removed in accordance with Section 1808.6.3.
2. The building official approves stabilization of the soil in accordance with Section 1808.6.4.

**1808.6.1 Foundations.** Foundations placed on or within the active zone of expansive soils shall be designed to resist differential volume changes and to prevent structural damage to the supported structure. Deflection and racking of the supported structure shall be limited to that which will not interfere with the usability and serviceability of the structure.

Foundations placed below where volume change occurs or below expansive soil shall comply with the following provisions:

1. Foundations extending into or penetrating expansive soils shall be designed to prevent uplift of the supported structure.
2. Foundations penetrating expansive soils shall be designed to resist forces exerted on the foundation due to soil volume changes or shall be isolated from the expansive soil.

**1808.6.2 Slab-on-ground foundations.** Moments, shears and deflections for use in designing slab-on-ground, mat or raft foundations on expansive soils shall be determined in accordance with WRI/CRSI *Design of Slab-on-Ground Foundations* or PTI DC 10.5. Using the moments, shears and deflections determined above, nonprestressed slabs-on-ground, mat or raft foundations on expansive soils shall be designed in accordance with WRI/CRSI *Design of Slab-on-Ground Foundations* and post-tensioned slab-on-ground, mat or raft foundations on expansive soils shall be designed in accordance with PTI DC 10.5. It shall be permitted to analyze and design such slabs by other methods that account for soil-structure interaction, the

deformed shape of the soil support, the plate or stiffened plate action of the slab as well as both center lift and edge lift conditions. Such alternative methods shall be rational and the basis for all aspects and parameters of the method shall be available for peer review.

**1808.6.3 Removal of expansive soil.** Where expansive soil is removed in lieu of designing foundations in accordance with Section 1808.6.1 or 1808.6.2, the soil shall be removed to a depth sufficient to ensure a constant moisture content in the remaining soil. Fill material shall not contain expansive soils and shall comply with Section 1804.5 or 1804.6.

**Exception:** Expansive soil need not be removed to the depth of constant moisture, provided that the confining pressure in the expansive soil created by the fill and supported structure exceeds the swell pressure.

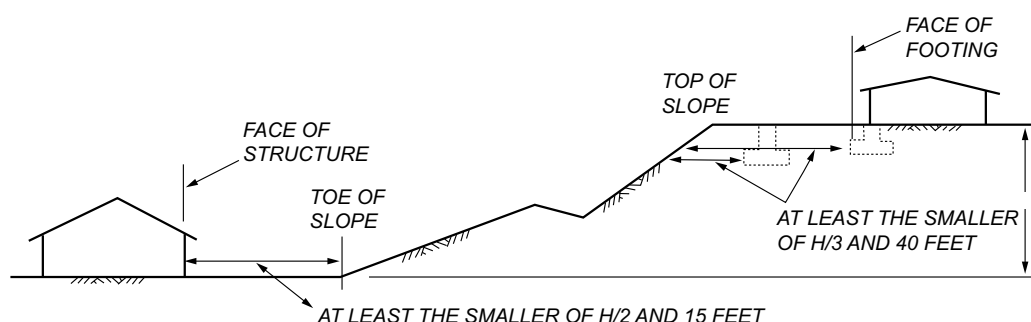
**1808.6.4 Stabilization.** Where the active zone of expansive soils is stabilized in lieu of designing foundations in accordance with Section 1808.6.1 or 1808.6.2, the soil shall be stabilized by chemical, dewatering, presaturation or equivalent techniques.

**1808.7 Foundations on or adjacent to slopes.** The placement of buildings and structures on or adjacent to slopes steeper than one unit vertical in three units horizontal (33.3-percent slope) shall comply with Sections 1808.7.1 through 1808.7.5.

**1808.7.1 Building clearance from ascending slopes.** In general, buildings below slopes shall be set a sufficient distance from the slope to provide protection from slope drainage, erosion and shallow failures. Except as provided in Section 1808.7.5 and Figure 1808.7.1, the following criteria will be assumed to provide this protection. Where the existing slope is steeper than one unit vertical in one unit horizontal (100-percent slope), the toe of the slope shall be assumed to be at the intersection of a horizontal plane drawn from the top of the foundation and a plane drawn tangent to the slope at an angle of 45 degrees (0.79 rad) to the horizontal. Where a retaining wall is constructed at the toe of the slope, the height of the slope shall be measured from the top of the wall to the top of the slope.

**Exception:** An open deck or patio, which is not covered with a roof or other overhead structure, shall not be considered a building for the specific application

L  
A  
A  
L



For SI: 1 foot = 304.8 mm.

**FIGURE 1808.7.1**  
**FOUNDATION CLEARANCES FROM SLOPES**

L  
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L

of the building clearance pursuant to CBC Section 1808.7.1 and CBC Figure 1808.7.1.

**1808.7.2 Foundation setback from descending slope surface.** Foundations on or adjacent to slope surfaces shall be founded in firm material with an embedment and set back from the slope surface sufficient to provide vertical and lateral support for the foundation without detrimental settlement. Except as provided for in Section 1808.7.5 and Figure 1808.7.1, the following setback is deemed adequate to meet the criteria. Where the slope is steeper than 1 unit vertical in 1 unit horizontal (100-percent slope), the required setback shall be measured from an imaginary plane 45 degrees (0.79 rad) to the horizontal, projected upward from the toe of the slope.

**1808.7.3 Pools.** The setback between pools regulated by this code and slopes shall be equal to one-half the building footing setback distance required by this section. That portion of the pool wall within a horizontal distance of 7 feet (2134 mm) from the top of the slope shall be capable of supporting the water in the pool without soil support.

**1808.7.4 Foundation elevation.** On graded sites, the top of any exterior foundation shall extend above the elevation of the street gutter at point of discharge or the inlet of an approved drainage device not less than 12 inches (305 mm) plus 2 percent. Alternate elevations are permitted subject to the approval of the building official, provided that it can be demonstrated that required drainage to the point of discharge and away from the structure is provided at all locations on the site.

**1808.7.5 Alternate setback and clearance.** Alternate setbacks and clearances are permitted, subject to the approval of the building official. The building official shall be permitted to require a geotechnical investigation as set forth in Section 1803.5.10.

**1808.8 Concrete foundations.** The design, materials and construction of concrete foundations shall comply with Sections 1808.8.1 through 1808.8.6 and the provisions of Chapter 19.

**Exception: [OSHPD 1R, 2 & 5] Not permitted by OSHPD.** Where concrete footings supporting walls of light-frame construction are designed in accordance with Table 1809.7, a specific design in accordance with Chapter 19 is not required.

**1808.8.1 Concrete or grout strength and mix proportioning.** Concrete or grout in foundations shall have a specified compressive strength ( $f'_c$ ) not less than the largest applicable value indicated in Table 1808.8.1.

Where concrete or grout is to be pumped, the mix design including slump shall be adjusted to produce a pumpable mixture.

**1808.8.2 Concrete cover.** The concrete cover provided for prestressed and nonprestressed reinforcement in foundations shall be not less than the largest applicable value specified in Table 1808.8.2. Longitudinal bars spaced less than 1½ inches (38 mm) clear distance apart shall be considered to be bundled bars for which the concrete cover provided shall be not less than that required by Section 20.5.1.3.5 of ACI 318. Concrete cover shall be measured from the concrete surface to the outermost surface of the steel to which the cover requirement applies. Where concrete is placed in a temporary or permanent casing or a mandrel, the inside face of the casing or mandrel shall be considered to be the concrete surface.

**1808.8.3 Placement of concrete.** Concrete shall be placed in such a manner as to ensure the exclusion of any foreign matter and to secure a full-size foundation. Concrete shall not be placed through water unless a tremie or other method approved by the building official is used. Where placed under or in the presence of water, the concrete shall be deposited by approved means to ensure minimum segregation of the mix and negligible turbulence of the water. Where depositing concrete from the top of a deep foundation element, the concrete shall be chuted directly into smooth-sided pipes or tubes or placed in a rapid and continuous operation through a funnel hopper centered at the top of the element.

**1808.8.4 Protection of concrete.** Concrete foundations shall be protected from freezing during depositing and for a period of not less than 5 days thereafter. Water shall not be allowed to flow through the deposited concrete.

**1808.8.5 Forming of concrete.** Concrete foundations are permitted to be cast against the earth where, in the opinion of the building official, soil conditions do not require formwork. Where formwork is required, it shall be in accordance with Section 26.11 of ACI 318.

**TABLE 1808.8.1  
MINIMUM SPECIFIED COMPRESSIVE STRENGTH  $f'_c$  OF CONCRETE OR GROUT**

FOUNDATION ELEMENT OR CONDITION	SPECIFIED COMPRESSIVE STRENGTH, $f'_c$
1. Foundations for structures assigned to Seismic Design Category A, B or C <i>[OSHPD 1R, 2 &amp; 5] Not permitted by OSHPD.</i>	2,500 psi
2a. Foundations for Group R or U occupancies of light-frame construction, two stories or less in height, assigned to Seismic Design Category D, E or F <i>[OSHPD 1R, 2 &amp; 5] Not permitted by OSHPD.</i>	2,500 psi
2b. Foundations for other structures assigned to Seismic Design Category D, E or F	3,000 psi
3. Precast nonprestressed driven piles	4,000 psi
4. Socketed drilled shafts	4,000 psi
5. Micropiles	4,000 psi
6. Precast prestressed driven piles	5,000 psi

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



**TABLE 1808.8.2  
MINIMUM CONCRETE COVER**

FOUNDATION ELEMENT OR CONDITION	MINIMUM COVER
1. Shallow foundations	In accordance with Section 20.5 of ACI 318
2. Precast nonprestressed deep foundation elements	
Exposed to seawater	3 inches
Not manufactured under plant conditions	2 inches
Manufactured under plant control conditions	In accordance with Section 20.5.1.3.3 of ACI 318
3. Precast prestressed deep foundation elements	
Exposed to seawater	2.5 inches
Other	In accordance with Section 20.5.1.3.3 of ACI 318
4. Cast-in-place deep foundation elements not enclosed by a steel pipe, tube or permanent casing	2.5 inches
5. Cast-in-place deep foundation elements enclosed by a steel pipe, tube or permanent casing	1 inch
6. Structural steel core within a steel pipe, tube or permanent casing	2 inches
7. Cast-in-place drilled shafts enclosed by a stable rock socket	1.5 inches

For SI: 1 inch = 25.4 mm.

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

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

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

1. Detached one- and two-family dwellings of light-frame construction and two stories or less above grade plane are not required to comply with the provisions of Section 18.13 of ACI 318.
2. Section 18.13.4.3(a) of ACI 318 shall not apply.

**1808.9 Vertical masonry foundation elements.** Vertical masonry foundation elements that are not foundation piers as defined in Section 202 shall be designed as piers, walls or columns, as applicable, in accordance with TMS 402.

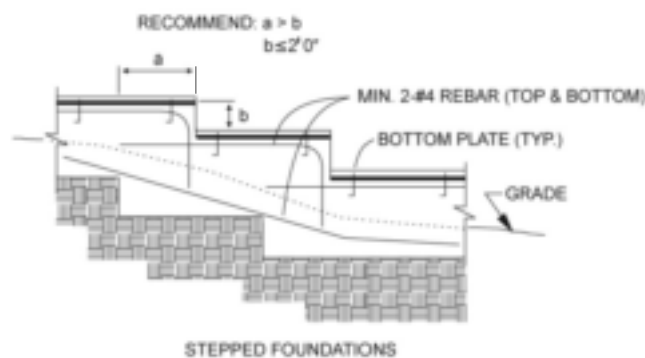
## SECTION 1809 SHALLOW FOUNDATIONS

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

**1809.2 Supporting soils.** Shallow foundations shall be built on undisturbed soil, compacted fill material or controlled low-strength material (CLSM). Compacted fill material shall be placed in accordance with Section 1804.5. CLSM shall be placed in accordance with Section 1804.6.

**1809.3 Stepped footings.** The top surface of footings shall be level. The bottom surface of footings shall be permitted to have a slope not exceeding one unit vertical in 10 units horizontal (10-percent slope). Footings shall be stepped where it is necessary to change the elevation of the top surface of the footing or where the surface of the ground slopes more than one unit vertical in 10 units horizontal (10-percent slope). For structures assigned to Seismic Design Category D, E or F, the

stepping requirement shall also apply to the top surface of grade beams supporting walls. Footings shall be reinforced with four 1/2-inch-diameter (12.7 mm) deformed reinforcing bars. Two bars shall be placed at the top and bottom of the footings as shown in Figure 1809.3.



**FIGURE 1809.3  
STEPPED FOUNDATIONS**

*[OSHPD 1R, 2 & 5]* Individual steps in continuous footings shall not exceed 18 inches (457 mm) in height and the slope of a series of such steps shall not exceed 1 unit vertical to 2 units horizontal (50-percent slope) unless otherwise recommended by a geotechnical report. The steps shall be detailed on the drawings. The local effects due to the discontinuity of the steps shall be considered in the design of the foundation.

**1809.4 Depth and width of footings.** The minimum depth of footings below the surface of undisturbed soil, compacted fill material or CLSM shall be 12 inches (305 mm). Where applicable, the requirements of CBC Section 1809.5 shall also be satisfied. The minimum width of footings shall be 12 inches (305 mm).

**1809.5 Frost protection.** Except where otherwise protected from frost, foundations and other permanent supports of buildings and structures shall be protected from frost by one or more of the following methods:

1. Extending below the frost line of the locality.
2. Constructing in accordance with ASCE 32.

3. Erecting on solid rock.

**Exception:** Free-standing buildings meeting all of the following conditions shall not be required to be protected:

1. Assigned to Risk Category I.
2. Area of 600 square feet (56 m<sup>2</sup>) or less for light-frame construction or 400 square feet (37 m<sup>2</sup>) or less for other than light-frame construction.
3. Eave height of 10 feet (3048 mm) or less.

Shallow foundations shall not bear on frozen soil unless such frozen condition is of a permanent character.

**1809.5.1 Frost protection at required exits.** Frost protection shall be provided at exterior landings for all required exits with outward-swinging doors. Frost protection shall only be required to the extent necessary to ensure the unobstructed opening of the required exit doors.

**1809.6 Location of footings.** Footings on granular soil shall be so located that the line drawn between the lower edges of adjoining footings shall not have a slope steeper than 30 degrees (0.52 rad) with the horizontal, unless the material supporting the higher footing is braced or retained or otherwise laterally supported in an approved manner or a greater slope has been properly established by engineering analysis.

**1809.7 Prescriptive footings for light-frame construction.** Where a specific design is not provided, concrete or masonry-unit footings supporting walls of light-frame construction shall be permitted to be designed in accordance with Table 1809.7. Prescriptive footings in Table 1809.7 shall not exceed one story above grade plane for structures assigned to Seismic Design Category D, E or F.

**TABLE 1809.7**  
**PRESCRIPTIVE FOOTINGS SUPPORTING**  
**WALLS OF LIGHT-FRAME CONSTRUCTION<sup>a, b, c, d, e</sup>**

NUMBER OF FLOORS SUPPORTED BY THE FOOTING <sup>f</sup>	WIDTH OF FOOTING (inches)	THICKNESS OF FOOTING (inches)
1	12	6
2	15	6
3	18	8 <sup>g</sup>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. Depth of footings shall be in accordance with CBC Section 1809.4.
- b. The ground under the floor is permitted to be excavated to the elevation of the top of the footing.
- c. Not adopted.
- d. See CBC Section 1908 for additional requirements for footings of structures assigned to Seismic Design Category C, D, E or F.
- e. For thickness of foundation walls, see LAMC Subsection 91.1807.1.6.
- f. Footings are permitted to support a roof in addition to the stipulated number of floors. Footings supporting roof only shall be as required for supporting one floor.
- g. Plain concrete footings for Group R-3 occupancies shall be permitted to be 6 inches thick.

**1809.8 Plain concrete footings.** *[OSHPD 1R, 2 & 5] Not permitted by OSHPD.* The edge thickness of plain concrete footings supporting walls of other than light-frame construction shall be not less than 8 inches (203 mm) where placed on soil or rock.

**Exception:** For plain concrete footings supporting Group R-3 occupancies, the edge thickness is permitted to be 6

inches (152 mm), provided that the footing does not extend beyond a distance greater than the thickness of the footing on either side of the supported wall.

**1809.9 Masonry-unit footings.** *[OSHPD 1R, 2 & 5] Not permitted by OSHPD.* The design, materials and construction of masonry-unit footings shall comply with Sections 1809.9.1 and 1809.9.2, and the provisions of Chapter 21.

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

**1809.9.1 Dimensions.** Masonry-unit footings shall be laid in Type M or S mortar complying with Section 2103.2.1 and the depth shall be not less than twice the projection beyond the wall, pier or column. The width shall be not less than 8 inches (203 mm) wider than the wall supported thereon.

**1809.9.2 Offsets.** The maximum offset of each course in brick foundation walls stepped up from the footings shall be 1½ inches (38 mm) where laid in single courses, and 3 inches (76 mm) where laid in double courses.

**1809.10 Pier and curtain wall foundations.** Except in Seismic Design Categories D, E and F, pier and curtain wall foundations shall be permitted to be used to support light-frame construction not more than two stories above grade plane, provided that the following requirements are met:

1. All load-bearing walls shall be placed on continuous concrete footings bonded integrally with the exterior wall footings.
2. The minimum actual thickness of a load-bearing masonry wall shall be not less than 4 inches (102 mm) nominal or 3⅝ inches (92 mm) actual thickness, and shall be bonded integrally with piers spaced 6 feet (1829 mm) on center (o.c.).
3. Piers shall be constructed in accordance with Chapter 21 and the following:
  - 3.1. The unsupported height of the masonry piers shall not exceed 10 times their least dimension.
  - 3.2. Where structural clay tile or hollow concrete masonry units are used for piers supporting beams and girders, the cellular spaces shall be filled solidly with concrete or Type M or S mortar.

**Exception:** Unfilled hollow piers shall be permitted where the unsupported height of the pier is not more than four times its least dimension.
  - 3.3. Hollow piers shall be capped with 4 inches (102 mm) of solid masonry or concrete or the cavities of the top course shall be filled with concrete or grout.
4. The maximum height of a 4-inch (102 mm) load-bearing masonry foundation wall supporting wood frame walls and floors shall not be more than 4 feet (1219 mm) in height.

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

**1809.11 Steel grillage footings.** Grillage footings of structural steel elements shall be separated with approved steel spacers and be entirely encased in concrete with not less than 6 inches (152 mm) on the bottom and not less than 4 inches (102 mm) at all other points. The spaces between the shapes shall be completely filled with concrete or cement grout.

**1809.12 Timber footings.** Timber footings shall be permitted for buildings of Type V construction and as otherwise approved by the Department. Such footings shall be treated in accordance with AWP A U1 (Commodity Specification A, Use Category 4B). Treated timbers are not required where placed entirely below permanent water level, or where used as capping for wood piles that project above the water level over submerged or marsh lands. The compressive stresses perpendicular to grain in untreated timber footings supported upon treated piles shall not exceed 70 percent of the allowable stresses for the species and grade of timber as specified in the AF&PA NDS. Timber footings shall not be used in structures assigned to Seismic Design Category D, E or F.

**1809.13 Footing seismic ties.** Where a structure is assigned to Seismic Design Category D, E or F, individual spread footings founded on soil defined in Chapter 20 of ASCE 7 as Site Class E or F shall be interconnected by ties. Unless it is demonstrated that equivalent restraint is provided by reinforced concrete beams within slabs on grade or reinforced concrete slabs on grade, ties shall be capable of carrying, in tension or compression, a force equal to the lesser of the product of the larger footing design gravity load times the seismic coefficient,  $S_{DS}$ , divided by 10 and 25 percent of the smaller footing design gravity load.

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

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

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

## SECTION 1810 DEEP FOUNDATIONS

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

**1810.1.1 Geotechnical investigation.** Deep foundations shall be designed and installed on the basis of a geotechnical investigation as set forth in Section 1803.

**1810.1.2 Use of existing deep foundation elements.** Deep foundation elements left in place where a structure has been demolished shall not be used for the support of new construction unless satisfactory evidence is submitted to the building official, which indicates that the elements are sound and meet the requirements of this code. Such elements shall be load tested or redriven to verify their capacities. The design load applied to such elements shall be the lowest allowable load as determined by tests or redriving data.

**1810.1.3 Deep foundation elements classified as columns.** Deep foundation elements standing unbraced in air, water or fluid soils shall be classified as columns and designed as such in accordance with the provisions of this code from their top down to the point where adequate lateral support is provided in accordance with Section 1810.2.1.

**Exception:** Where the unsupported height to least horizontal dimension of a cast-in-place deep foundation element does not exceed three, it shall be permitted to design and construct such an element as a pedestal in accordance with ACI 318.

**1810.1.4 Special types of deep foundations.** The use of types of deep foundation elements not specifically mentioned herein is permitted, subject to the approval of the building official, upon the submission of acceptable test data, calculations and other information relating to the structural properties and load capacity of such elements. The allowable stresses for materials shall not in any case exceed the limitations specified herein.

**1810.2 Analysis.** The analysis of deep foundations for design shall be in accordance with Sections 1810.2.1 through 1810.2.5.

**1810.2.1 Lateral support.** Any soil other than fluid soil shall be deemed to afford sufficient lateral support to prevent buckling of deep foundation elements and to permit the design of the elements in accordance with accepted engineering practice and the applicable provisions of this code.

Where deep foundation elements stand unbraced in air, water or fluid soils, it shall be permitted to consider them laterally supported at a point 5 feet (1524 mm) into stiff soil or 10 feet (3048 mm) into soft soil unless otherwise approved by the building official on the basis of a geotechnical investigation by a registered design professional.

**1810.2.2 Stability.** Deep foundation elements shall be braced to provide lateral stability in all directions. Three or more elements connected by a rigid cap shall be considered to be braced, provided that the elements are located in radial directions from the centroid of the group not less than 60 degrees (1 rad) apart. A two-element group in a rigid cap shall be considered to be braced along the axis connecting the two elements. Methods used to brace deep

foundation elements shall be subject to the approval of the building official.

Deep foundation elements supporting walls shall be placed alternately in lines spaced not less than 1 foot (305 mm) apart and located symmetrically under the center of gravity of the wall load carried, unless effective measures are taken to provide for eccentricity and lateral forces, or the foundation elements are adequately braced to provide for lateral stability.

**Exceptions:**

1. Isolated cast-in-place deep foundation elements without lateral bracing shall be permitted where the least horizontal dimension is not less than 2 feet (610 mm), adequate lateral support in accordance with Section 1810.2.1 is provided for the entire height and the height does not exceed 12 times the least horizontal dimension.
2. A single row of deep foundation elements without lateral bracing is permitted for one- and two-family dwellings and lightweight construction not exceeding two stories above grade plane or 35 feet (10 668 mm) in building height, provided that the centers of the elements are located within the width of the supported wall.

**1810.2.3 Settlement.** The settlement of a single deep foundation element or group thereof shall be estimated based on approved methods of analysis. The predicted settlement shall cause neither harmful distortion of, nor instability in, the structure, nor cause any element to be loaded beyond its capacity.

**1810.2.4 Lateral loads.** The moments, shears and lateral deflections used for design of deep foundation elements shall be established considering the nonlinear interaction of the shaft and soil, as determined by a registered design professional. Where the ratio of the depth of embedment of the element to its least horizontal dimension is less than or equal to six, it shall be permitted to assume the element is rigid.

**1810.2.4.1 Seismic Design Categories D through F.**

For structures assigned to Seismic Design Category D, E or F, deep foundation elements on Site Class E or F sites, as determined in Section 1613.2.2, shall be designed and constructed to withstand maximum imposed curvatures from earthquake ground motions and structure response. Curvatures shall include free-field soil strains modified for soil-foundation-structure interaction coupled with foundation element deformations associated with earthquake loads imparted to the foundation by the structure.

**Exception:** Deep foundation elements that satisfy the following additional detailing requirements shall be deemed to comply with the curvature capacity requirements of this section.

1. Precast prestressed concrete piles detailed in accordance with Section 1810.3.8.
2. Cast-in-place deep foundation elements with a minimum longitudinal reinforcement ratio of 0.005 extending the full length of the element

and detailed in accordance with Sections 18.7.5.2, 18.7.5.3 and 18.7.5.4 of ACI 318 as required by Section 1810.3.9.4.2.2.

**1810.2.5 Group effects.** The analysis shall include group effects on lateral behavior where the center-to-center spacing of deep foundation elements in the direction of lateral force is less than eight times the least horizontal dimension of an element. The analysis shall include group effects on axial behavior where the center-to-center spacing of deep foundation elements is less than three times the least horizontal dimension of an element. Group effects shall be evaluated using a generally accepted method of analysis; the analysis for uplift of grouped elements with center-to-center spacing less than three times the least horizontal dimension of an element shall be evaluated in accordance with Section 1810.3.3.1.6.

**1810.3 Design and detailing.** Deep foundations shall be designed and detailed in accordance with Sections 1810.3.1 through 1810.3.13.

**1810.3.1 Design conditions.** Design of deep foundations shall include the design conditions specified in Sections 1810.3.1.1 through 1810.3.1.6, as applicable.

**1810.3.1.1 Design methods for concrete elements.**

Where concrete deep foundations are laterally supported in accordance with Section 1810.2.1 for the entire height and applied forces cause bending moments not greater than those resulting from accidental eccentricities, structural design of the element using the allowable stress design load combinations specified in ASCE 7, Section 2.4 or the alternative allowable stress design load combinations of Section 1605.2 and the allowable stresses specified in this chapter shall be permitted. Otherwise, the structural design of concrete deep foundation elements shall use the strength load combinations specified in ASCE 7, Section 2.3 and approved strength design methods.

**1810.3.1.2 Composite elements.** Where a single deep foundation element comprises two or more sections of different materials or different types spliced together, each section of the composite assembly shall satisfy the applicable requirements of this code, and the maximum allowable load in each section shall be limited by the structural capacity of that section.

**1810.3.1.3 Mislocation.** The foundation or superstructure shall be designed to resist the effects of the mislocation of any deep foundation element by not less than 3 inches (76 mm). To resist the effects of mislocation, compressive overload of deep foundation elements to 110 percent of the allowable design load shall be permitted.

**1810.3.1.4 Driven piles.** Driven piles shall be designed and manufactured in accordance with accepted engineering practice to resist all stresses induced by handling, driving and service loads.

**1810.3.1.5 Helical piles.** Helical piles shall be designed and manufactured in accordance with accepted engineering practice to resist all stresses induced by instal-

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lation into the ground and service loads. Helical piles shall not be used for support of new structures. Helical piles may be used to underpin foundations of existing structures or retrofit or remediate deficient foundations of existing structures. Helical piles shall not be used to resist any horizontal loads.

**1810.3.1.5.1 Helical piles seismic requirements.** *[OSHPD 1R, 2B & 5] For structures assigned to Seismic Design Category D, E or F, capacities of helical piles shall be determined in accordance with Section 1810.3.3 by at least two project specific pre-production tests for each soil profile, size and depth of helical pile. At least two percent of all production piles shall be proof tested to design strength determined by using load combinations in ASCE 7, Section 2.3.6.*

*Helical piles shall satisfy corrosion resistance requirements of ICC-ES AC 308. In addition, all helical pile materials that are subject to corrosion shall include at least  $1/16$  inch corrosion allowance.*

*Helical piles shall not be considered as carrying any horizontal loads.*

**1810.3.1.6 Casings.** Temporary and permanent casings shall be of steel and shall be sufficiently strong to resist collapse and sufficiently watertight to exclude any foreign materials during the placing of concrete. Where a permanent casing is considered reinforcing steel, the steel shall be protected under the conditions specified in Section 1810.3.2.5. Horizontal joints in the casing shall be spliced in accordance with Section 1810.3.6.

**1810.3.2 Materials.** The materials used in deep foundation elements shall satisfy the requirements of Sections 1810.3.2.1 through 1810.3.2.8, as applicable.

**1810.3.2.1 Concrete.** Where concrete is cast in a steel pipe or where an enlarged base is formed by compacting concrete, the maximum size for coarse aggregate shall be  $3/4$  inch (19.1 mm). Concrete to be compacted shall have a zero slump.

**1810.3.2.1.1 Seismic hooks.** For structures assigned to Seismic Design Category C, D, E or F, the ends of hoops, spirals and ties used in concrete deep foundation elements shall be terminated with seismic hooks, as defined in ACI 318, and shall be turned into the confined concrete core.

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

**1810.3.2.2 Prestressing steel.** Prestressing steel shall conform to ASTM A416.

**1810.3.2.3 Steel.** Structural steel H-piles and structural steel sheet piling shall conform to the material requirements in ASTM A6. Steel pipe piles shall conform to the material requirements in ASTM A252. Fully welded steel piles shall be fabricated from plates that conform to the material requirements in ASTM A36, ASTM A283, ASTM A572, ASTM A588 or ASTM A690.

**1810.3.2.4 Timber.** Timber deep foundation elements shall be designed as piles or poles in accordance with AF&PA NDS. Round timber elements shall conform to ASTM D25. Sawn timber elements shall conform to DOC PS-20. Timber shall not be used in structures assigned to Seismic Design Category D, E or F.

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

**1810.3.2.5 Protection of materials.** Where boring records or site conditions indicate possible deleterious action on the materials used in deep foundation elements because of soil constituents, changing water levels or other factors, the elements shall be adequately protected by materials, methods or processes approved by the building official. Protective materials shall be applied to the elements so as not to be rendered ineffective by installation. The effectiveness of such protective measures for the particular purpose shall have been thoroughly established by satisfactory service records or other evidence.

**1810.3.2.6 Allowable stresses.** The allowable stresses for materials used in deep foundation elements shall not exceed those specified in Table 1810.3.2.6.

**1810.3.2.7 Increased allowable compressive stress for cased mandrel-driven cast-in-place elements.** The allowable compressive stress in the concrete shall be permitted to be increased as specified in Table 1810.3.2.6 for those portions of permanently cased cast-in-place elements that satisfy all of the following conditions:

1. The design shall not use the casing to resist any portion of the axial load imposed.
2. The casing shall have a sealed tip and be mandrel driven.
3. The thickness of the casing shall be not less than manufacturer's standard gage No.14 (0.068 inch) (1.75 mm).
4. The casing shall be seamless or provided with seams of strength equal to the basic material and be of a configuration that will provide confinement to the cast-in-place concrete.
5. The ratio of steel yield strength ( $F_y$ ) to specified compressive strength ( $f'_c$ ) shall be not less than six.

**TABLE 1810.3.2.6  
ALLOWABLE STRESSES FOR MATERIALS USED IN DEEP FOUNDATION ELEMENTS**

MATERIAL TYPE AND CONDITION	MAXIMUM ALLOWABLE STRESS <sup>a</sup>
1. Concrete or grout in compression <sup>b</sup> Cast-in-place with a permanent casing in accordance with Section 1810.3.2.7 or Section 1810.3.5.3.4 Cast-in-place in other permanent casing or rock Cast-in-place without a permanent casing Precast nonprestressed Precast prestressed	$0.4 f'_c$ $0.33 f'_c$ $0.3 f'_c$ $0.33 f'_c$ $0.33 f'_c - 0.27 f_{pc}$
2. Nonprestressed reinforcement in compression	$0.4 f_y \leq 30,000$ psi
3. Steel in compression Cores within concrete-filled pipes or tubes Pipes, tubes or H-piles, where justified in accordance with Section 1810.3.2.8 Pipes or tubes for micropiles Other pipes, tubes or H-piles Helical piles	$0.5 F_y \leq 32,000$ psi $0.5 F_y \leq 32,000$ psi $0.4 F_y \leq 32,000$ psi $0.35 F_y \leq 24,000$ psi $0.6 F_y \leq 0.5 F_u$
4. Nonprestressed reinforcement in tension Within micropiles Other conditions For load combinations that do not include wind or seismic loads For load combinations that include wind or seismic loads	$0.6 f_y$  $0.5 f_y \leq 30,000$ psi $0.5 f_y \leq 40,000$ psi
5. Steel in tension Pipes, tubes or H-piles, where justified in accordance with Section 1810.3.2.8 Other pipes, tubes or H-piles Helical piles	$0.5 F_y \leq 32,000$ psi $0.35 F_y \leq 24,000$ psi $0.6 F_y \leq 0.5 F_u$
6. Timber	In accordance with the ANSI/AWC NDS

a.  $f'_c$  is the specified compressive strength of the concrete or grout;  $f_{pc}$  is the compressive stress on the gross concrete section due to effective prestress forces only;  $f_y$  is the specified yield strength of reinforcement;  $F_y$  is the specified minimum yield stress of steel;  $F_u$  is the specified minimum tensile stress of structural steel.

b. The stresses specified apply to the gross cross-sectional area of the concrete for precast prestressed piles and to the net cross-sectional area for all other piles. Where a temporary or permanent casing is used, the inside face of the casing shall be considered the outer edge of the concrete cross-section.

- The nominal diameter of the element shall not be greater than 16 inches (406 mm).

#### **1810.3.2.8 Justification of higher allowable stresses.**

Use of allowable stresses greater than those specified in Section 1810.3.2.6 shall be permitted where supporting data justifying such higher stresses is filed with the building official. Such substantiating data shall include the following:

- A geotechnical investigation in accordance with Section 1803.
- Load tests in accordance with Section 1810.3.3.1.2, regardless of the load supported by the element.

The design and installation of the deep foundation elements shall be under the direct supervision of a registered design professional knowledgeable in the field of soil mechanics and deep foundations who shall submit a report to the building official stating that the elements as installed satisfy the design criteria.

**1810.3.3 Determination of allowable loads.** The allowable axial and lateral loads on deep foundation elements shall be determined by an approved formula, load tests or method of analysis.

**1810.3.3.1 Allowable axial load.** The allowable axial load on a deep foundation element shall be determined

in accordance with Sections 1810.3.3.1.1 through 1810.3.3.1.9.

**Exception:** Where approved by the building official, load testing is not required.

**1810.3.3.1.1 Driving criteria.** The allowable compressive load on any driven deep foundation element where determined by the application of an approved driving formula shall not exceed 40 tons (356 kN). For allowable loads above 40 tons (356 kN), the wave equation method of analysis shall be used to estimate driveability for both driving stresses and net displacement per blow at the ultimate load. Allowable loads shall be verified by load tests in accordance with Section 1810.3.3.1.2. The formula or wave equation load shall be determined for gravity-drop or power-actuated hammers and the hammer energy used shall be the maximum consistent with the size, strength and weight of the driven elements. The use of a follower is permitted only with the approval of the building official. The introduction of fresh hammer cushion or pile cushion material just prior to final penetration is not permitted.

**1810.3.3.1.2 Load tests.** Where design compressive loads are greater than those determined using the allowable stresses specified in Section 1810.3.2.6, where the design load for any deep foundation element

is in doubt, or where cast-in-place deep foundation elements have an enlarged base formed either by compacting concrete or by driving a precast base, control test elements shall be tested in accordance with ASTM D1143 or ASTM D4945. One element or more shall be load tested in each area of uniform subsoil conditions. Where required by the building official, additional elements shall be load tested where necessary to establish the safe design capacity. The resulting allowable loads shall not be more than one-half of the ultimate axial load capacity of the test element as assessed by one of the published methods listed in Section 1810.3.3.1.3 with consideration for the test type, duration and subsoil. The ultimate axial load capacity shall be determined by a registered design professional with consideration given to tolerable total and differential settlements at design load in accordance with Section 1810.2.3. In subsequent installation of the balance of deep foundation elements, all elements shall be deemed to have a supporting capacity equal to that of the control element where such elements are of the same type, size and relative length as the test element; are installed using the same or comparable methods and equipment as the test element; are installed in similar subsoil conditions as the test element; and, for driven elements, where the rate of penetration (for example, net displacement per blow) of such elements is equal to or less than that of the test element driven with the same hammer through a comparable driving distance.

**1810.3.3.1.3 Load test evaluation methods.** It shall be permitted to evaluate load tests of deep foundation elements using any of the following methods:

1. Davisson Offset Limit.
2. Brinch-Hansen 90-percent Criterion.
3. Butler-Hoy Criterion.
4. Other methods approved by the building official.

**1810.3.3.1.4 Allowable frictional resistance.** The assumed frictional resistance developed by any uncased cast-in-place deep foundation element shall not exceed  $\frac{1}{6}$  of the bearing value of the soil material at minimum depth as set forth in CBC Table 1806.2, up to a maximum of 500 psf (24 kPa), unless a greater value is allowed by the Department on the basis of a geotechnical investigation as specified in Section 1803 or a greater value is substantiated by a load test in accordance with Section 1810.3.3.1.2. Frictional resistance and bearing resistance shall not be assumed to act simultaneously.

**1810.3.3.1.5 Uplift capacity of a single deep foundation element.** Where required by the design, the uplift capacity of a single deep foundation element shall be determined by an approved method of analysis based on a minimum factor of safety of three or by load tests conducted in accordance with ASTM D3689. The maximum allowable uplift load shall not exceed the ultimate load capacity as determined in Section 1810.3.3.1.2, using the results of load tests

conducted in accordance with ASTM D3689, divided by a factor of safety of two.

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

**1810.3.3.1.6 Allowable uplift load of grouped deep foundation elements.** For grouped deep foundation elements subjected to uplift, the allowable uplift load for the group shall be calculated by a generally accepted method of analysis. Where the deep foundation elements in the group are placed at a center-to-center spacing less than three times the least horizontal dimension of the largest single element, the allowable uplift load for the group is permitted to be calculated as the lesser of:

1. The proposed individual allowable uplift load times the number of elements in the group.
2. Two-thirds of the effective weight of the group and the soil contained within a block defined by the perimeter of the group and the length of the element, plus two-thirds of the ultimate shear resistance along the soil block.

**1810.3.3.1.7 Load-bearing capacity.** Deep foundation elements shall develop ultimate load capacities of not less than twice the design working loads in the designated load-bearing layers. Analysis shall show that soil layers underlying the designated load-bearing layers do not cause the load-bearing capacity safety factor to be less than two.

**1810.3.3.1.8 Bent deep foundation elements.** The load-bearing capacity of deep foundation elements discovered to have a sharp or sweeping bend shall be determined by an approved method of analysis or by load testing a representative element.

**1810.3.3.1.9 Helical piles.** The allowable axial design load,  $P_a$ , of helical piles shall be determined as follows:

$$P_a = 0.5 P_u \quad \text{(Equation 18-4)}$$

where  $P_u$  is the least value of:

1. Base capacity plus shaft resistance of the helical pile. The base capacity is equal to the sum of the areas of the helical bearing plates times the ultimate bearing capacity of the soil or rock comprising the bearing stratum. The shaft resistance is equal to the area of the shaft above the uppermost helical bearing plate times the ultimate skin resistance.
2. Ultimate capacity determined from well-documented correlations with installation torque.
3. Ultimate capacity determined from load tests where required by Section 1810.3.3.1.2. *[OSHPD 1R, 2B & 5] Load tests are required to determine the ultimate capacity.*
4. Ultimate axial capacity of pile shaft.
5. Ultimate axial capacity of pile shaft couplings.

6. Sum of the ultimate axial capacity of helical bearing plates affixed to pile.

**1810.3.3.2 Allowable lateral load.** Where required by the design, the lateral load capacity of a single deep foundation element or a group thereof shall be determined by an approved method of analysis or by lateral load tests to not less than twice the proposed design working load. The resulting allowable load shall not be more than one-half of the load that produces a gross lateral movement of 1 inch (25 mm) at the lower of the top of foundation element and the ground surface, unless it can be shown that the predicted lateral movement shall cause neither harmful distortion of, nor instability in, the structure, nor cause any element to be loaded beyond its capacity.

**1810.3.4 Subsiding soils or strata.** Where deep foundation elements are installed through subsiding soils or other subsiding strata and derive support from underlying firmer materials, consideration shall be given to the downward frictional forces potentially imposed on the elements by the subsiding upper strata.

Where the influence of subsiding soils or strata is considered as imposing loads on the element, the allowable stresses specified in this chapter shall be permitted to be increased where satisfactory substantiating data are submitted.

**1810.3.5 Dimensions of deep foundation elements.** The dimensions of deep foundation elements shall be in accordance with Sections 1810.3.5.1 through 1810.3.5.3, as applicable.

**1810.3.5.1 Precast.** The minimum lateral dimension of precast concrete deep foundation elements shall be 8 inches (203 mm). Corners of square elements shall be chamfered.

**1810.3.5.2 Cast-in-place or grouted-in-place.** Cast-in-place and grouted-in-place deep foundation elements shall satisfy the requirements of this section.

**1810.3.5.2.1 Cased.** Cast-in-place or grouted-in-place deep foundation elements with a permanent casing shall have a nominal outside diameter of not less than 8 inches (203 mm).

**1810.3.5.2.2 Uncased.** Cast-in-place or grouted-in-place deep foundation elements without a permanent casing shall have a specified diameter of not less than 12 inches (305 mm). The element length shall not exceed 30 times the specified diameter.

**Exception:** The length of the element is permitted to exceed 30 times the specified diameter, provided that the design and installation of the deep foundations are under the direct supervision of a registered design professional knowledgeable in the field of soil mechanics and deep foundations. The registered design professional shall submit a report to the building official stating that the elements were installed in compliance with the approved construction documents.

**1810.3.5.2.3 Micropiles.** Micropiles shall have a nominal diameter of 12 inches (305 mm) or less. The

minimum diameter set forth elsewhere in Section 1810.3.5 shall not apply to micropiles.

**1810.3.5.3 Steel.** Steel deep foundation elements shall satisfy the requirements of this section.

**1810.3.5.3.1 Structural steel H-piles.** Sections of structural steel H-piles shall comply with the requirements for HP shapes in ASTM A6, or the following:

1. The flange projections shall not exceed 14 times the minimum thickness of metal in either the flange or the web and the flange widths shall be not less than 80 percent of the depth of the section.
2. The nominal depth in the direction of the web shall be not less than 8 inches (203 mm).
3. Flanges and web shall have a minimum nominal thickness of  $\frac{3}{8}$  inch (9.5 mm).

For structures assigned to Seismic Design Category D, E or F, design and detailing of H-piles shall also conform to the requirements of AISC 341.

**1810.3.5.3.2 Fully welded steel piles fabricated from plates.** Sections of fully welded steel piles fabricated from plates shall comply with the following:

1. The flange projections shall not exceed 14 times the minimum thickness of metal in either the flange or the web and the flange widths shall be not less than 80 percent of the depth of the section.
2. The nominal depth in the direction of the web shall be not less than 8 inches (203 mm).
3. Flanges and web shall have a minimum nominal thickness of  $\frac{3}{8}$  inch (9.5 mm).

**1810.3.5.3.3 Structural steel sheet piling.** Individual sections of structural steel sheet piling shall conform to the profile indicated by the manufacturer, and shall conform to the general requirements specified by ASTM A6.

*[OSHDP 1R, 2 & 5] Installation of sheet piling shall satisfy inspection, monitoring and observation requirements in Sections 1812.6 and 1812.7.*

**1810.3.5.3.4 Steel pipes and tubes.** Steel pipes and tubes used as deep foundation elements shall have a nominal outside diameter of not less than 8 inches (203 mm). Where steel pipes or tubes are driven open ended, they shall have not less than 0.34 square inch (219 mm<sup>2</sup>) of steel in cross section to resist each 1,000 foot-pounds (1356 Nm) of pile hammer energy, or shall have the equivalent strength for steels having a yield strength greater than 35,000 psi (241 MPa) or the wave equation analysis shall be permitted to be used to assess compression stresses induced by driving to evaluate if the pile section is appropriate for the selected hammer. Where a pipe or tube with wall thickness less than 0.179 inch (4.6 mm) is driven open ended, a suitable cutting shoe shall be provided. Concrete-filled steel pipes or tubes in structures assigned to Seismic Design Category C,



diameters throughout the remainder of the reinforced length.

**Exceptions:**

1. The requirements of this section shall not apply to concrete cast in structural steel pipes or tubes.
2. A spiral-welded metal casing of a thickness not less than the manufacturer's standard No. 14 gage (0.068 inch) is permitted to provide concrete confinement in lieu of the closed ties or spirals. Where used as such, the metal casing shall be protected against possible deleterious action due to soil constituents, changing water levels or other factors indicated by boring records of site conditions.

**1810.3.9.4.2 Seismic reinforcement in Seismic Design Categories D through F.** For structures assigned to Seismic Design Category D, E or F, cast-in-place deep foundation elements shall be reinforced as specified in this section. Reinforcement shall be provided where required by analysis.

Not fewer than four longitudinal bars, with a minimum longitudinal reinforcement ratio of 0.005, shall be provided throughout the minimum reinforced length of the element as defined in this section starting at the top of the element. The minimum reinforced length of the element shall be taken as the greatest of the following:

1. One-half of the element length.
2. A distance of 10 feet (3048 mm).
3. Three times the least element dimension.
4. The distance from the top of the element to the point where the design cracking moment determined in accordance with Section 1810.3.9.1 exceeds the required moment strength determined using the load combinations of ASCE 7, Section 2.3.

Transverse reinforcement shall consist of closed ties or spirals not smaller than No. 3 bars for elements with a least dimension up to 20 inches (508 mm), and No. 4 bars for larger elements. Throughout the remainder of the reinforced length outside the regions with transverse confinement reinforcement, as specified in Section 1810.3.9.4.2.1 or 1810.3.9.4.2.2, the spacing of transverse reinforcement shall not exceed the least of the following:

1. 12 longitudinal bar diameters.
2. One-half the least dimension of the element.
3. 12 inches (305 mm).

**Exceptions:**

1. The requirements of this section shall not apply to concrete cast in structural steel pipes or tubes.

2. A spiral-welded metal casing of a thickness not less than manufacturer's standard No. 14 gage (0.068 inch) is permitted to provide concrete confinement in lieu of the closed ties or spirals. Where used as such, the metal casing shall be protected against possible deleterious action due to soil constituents, changing water levels or other factors indicated by boring records of site conditions.

**1810.3.9.4.2.1 Site Classes A through D.** For Site Class A, B, C or D sites, transverse confinement reinforcement shall be provided in the element in accordance with Sections 18.7.5.2, 18.7.5.3 and 18.7.5.4 of ACI 318 within three times the least element dimension at the bottom of the pile cap. A transverse spiral reinforcement ratio of not less than one-half of that required in Table 18.10.6.4(g) of ACI 318 shall be permitted. *[OSHPD 1R, 2 & 5] A transverse spiral reinforcement ratio of not less than one-half of that required in Section 18.7.5.4 of ACI 318 shall be permitted for concrete deep foundation elements.*

**1810.3.9.4.2.2 Site Classes E and F.** For Site Class E or F sites, transverse confinement reinforcement shall be provided in the element in accordance with Sections 18.7.5.2, 18.7.5.3 and 18.7.5.4 of ACI 318 within seven times the least element dimension of the pile cap and within seven times the least element dimension of the interfaces of strata that are hard or stiff and strata that are liquefiable or are composed of soft- to medium-stiff clay.

**1810.3.9.5 Belled drilled shafts.** Where drilled shafts are belled at the bottom, the edge thickness of the bell shall be not less than that required for the edge of footings. Where the sides of the bell slope at an angle less than 60 degrees (1 rad) from the horizontal, the effects of vertical shear shall be considered.

**1810.3.9.6 Socketed drilled shafts.** Socketed drilled shafts shall have a permanent pipe or tube casing that extends down to bedrock and an uncased socket drilled into the bedrock, both filled with concrete. Socketed drilled shafts shall have reinforcement or a structural steel core for the length as indicated by an approved method of analysis.

The depth of the rock socket shall be sufficient to develop the full load-bearing capacity of the element with a minimum safety factor of two, but the depth shall be not less than the outside diameter of the pipe or tube casing. The design of the rock socket is permitted to be predicated on the sum of the allowable load-bearing pressure on the bottom of the socket plus bond along the sides of the socket.

Where a structural steel core is used, the gross cross-sectional area of the core shall not exceed 25 percent of the gross area of the drilled shaft.

**1810.3.10 Micropiles.** Micropiles shall be designed and detailed in accordance with Sections 1810.3.10.1 through 1810.3.10.4.

**1810.3.10.1 Construction.** Micropiles shall develop their load-carrying capacity by means of a bond zone in soil, bedrock or a combination of soil and bedrock. Micropiles shall be grouted and have either a steel pipe or tube or steel reinforcement at every section along the length. It shall be permitted to transition from deformed reinforcing bars to steel pipe or tube reinforcement by extending the bars into the pipe or tube section by not less than their development length in tension in accordance with ACI 318.

**1810.3.10.2 Materials.** Reinforcement shall consist of deformed reinforcing bars in accordance with ASTM A615 Grade 60 or 75 or ASTM A722 Grade 150.

The steel pipe or tube shall have a minimum wall thickness of  $\frac{3}{16}$  inch (4.8 mm). Splices shall comply with Section 1810.3.6. The steel pipe or tube shall have a minimum yield strength of 45,000 psi (310 MPa) and a minimum elongation of 15 percent as shown by mill certifications or two coupon test samples per 40,000 pounds (18 160 kg) of pipe or tube.

**1810.3.10.3 Reinforcement.** For micropiles or portions thereof grouted inside a temporary or permanent casing or inside a hole drilled into bedrock or a hole drilled with grout, the steel pipe or tube or steel reinforcement shall be designed to carry not less than 40 percent of the design compression load. Micropiles or portions thereof grouted in an open hole in soil without temporary or permanent casing and without suitable means of verifying the hole diameter during grouting shall be designed to carry the entire compression load in the reinforcing steel. Where a steel pipe or tube is used for reinforcement, the portion of the grout enclosed within the pipe is permitted to be included in the determination of the allowable stress in the grout.

**1810.3.10.4 Seismic reinforcement.** For structures assigned to Seismic Design Category C, a permanent steel casing shall be provided from the top of the micropile down to the point of zero curvature. For structures assigned to Seismic Design Category D, E or F, the micropile shall be considered as an alternative system in accordance with Section 104.2.6. The alternative system design, supporting documentation and test data shall be submitted to the Department for review and approval.

**1810.3.10.4.1 Seismic requirements.** [OSHPD 1R, 2B & 5] For structures assigned to Seismic Design Category D, E or F, a permanent steel casing having a minimum thickness of  $\frac{3}{8}$  inch shall be provided from the top of the micropile down to a minimum of 120 percent of the point of zero curvature. Capacity of micropiles shall be determined in accordance with Section 1810.3.3 by at least two project specific pre-production tests for each soil profile, size and depth of micropile. At least two percent of all production piles shall be proof tested to

design strength determined by using load combinations in ASCE 7, Section 2.3.6.

Steel casing length in soil shall be considered as unbonded and shall not be considered as contributing to friction. Casing shall provide confinement at least equivalent to hoop reinforcing required by ACI 318 Section 18.13.5.

Reinforcement shall have Class 1 corrosion protection in accordance with PTI Recommendations for Prestressed Rock and Soil Anchors. Steel casing design shall include at least  $\frac{1}{16}$ -inch corrosion allowance.

Micropiles shall not be considered as carrying any horizontal loads.

**1810.3.11 Pile caps.** Pile caps shall conform with ACI 318 and this section. Pile caps shall be of reinforced concrete, and shall include all elements to which vertical deep foundation elements are connected, including grade beams and mats. The soil immediately below the pile cap shall not be considered as carrying any vertical load, with the exception of a combined pile raft. [OSHPD 1R, 2 & 5] A combined pile raft foundation shall be an alternative system. The tops of vertical deep foundation elements shall be embedded not less than 3 inches (76 mm) into pile caps and the caps shall extend not less than 4 inches (102 mm) beyond the edges of the elements. The tops of elements shall be cut or chipped back to sound material before capping.

**1810.3.11.1 Seismic Design Categories C through F.** For structures assigned to Seismic Design Category C, D, E or F, concrete deep foundation elements shall be connected to the pile cap in accordance with ACI 318.

For resistance to uplift forces, anchorage of steel pipes, tubes or H-piles to the pile cap shall be made by means other than concrete bond to the bare steel section. Concrete-filled steel pipes or tubes shall have reinforcement of not less than 0.01 times the cross-sectional area of the concrete fill developed into the cap and extending into the fill a length equal to two times the required cap embedment, but not less than the development length in tension of the reinforcement.

**1810.3.11.2 Seismic Design Categories D through F.** For structures assigned to Seismic Design Category D, E or F, deep foundation element resistance to uplift forces or rotational restraint shall be provided by anchorage into the pile cap, designed considering the combined effect of axial forces due to uplift and bending moments due to fixity to the pile cap. Anchorage shall develop not less than 25 percent of the strength of the element in tension. Anchorage into the pile cap shall comply with the following:

1. In the case of uplift, the anchorage shall be capable of developing the least of the following:
  - 1.1. The nominal tensile strength of the longitudinal reinforcement in a concrete element.
  - 1.2. The nominal tensile strength of a steel element.

- 1.3. The frictional force developed between the element and the soil multiplied by 1.3.

**Exception:** The anchorage is permitted to be designed to resist the axial tension force resulting from the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.

2. In the case of rotational restraint, the anchorage shall be designed to resist the axial and shear forces, and moments resulting from the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7 or the anchorage shall be capable of developing the full axial, bending and shear nominal strength of the element.
3. The connection between the pile cap and the steel H-piles or unfilled steel pipe piles in structures assigned to Seismic Design Category D, E or F shall be designed for a tensile force of not less than 10 percent of the pile compression capacity.

**Exceptions:**

1. Connection tensile capacity need not exceed the strength required to resist seismic load effects including overstrength of ASCE 7, Section 12.4.3 or 12.14.3.2.
2. Connections need not be provided where the foundation or supported structure does not rely on the tensile capacity of the piles for stability under the design seismic force. *[OSHPD 1R, 2B & 5] Not permitted by OSHPD.*

Where the vertical lateral-force-resisting elements are columns, the pile cap flexural strengths shall exceed the column flexural strength. The connection between batter piles and pile caps shall be designed to resist the nominal strength of the pile acting as a short column. Batter piles and their connection shall be designed to resist forces and moments that result from the application of seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7.

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

**Exception:** Grade beams designed to resist the seismic load effects including overstrength factor in accordance with Section 2.3.6 or 2.4.5 of ASCE 7. *[OSHPD 1R, 2B & 5] Need not comply with Section 18.13.3 of ACI 318.*

**1810.3.13 Seismic ties.** Seismic ties shall comply with the provisions of ACI 318.

**Exception:** In Group R-3 and U occupancies of light-frame construction, deep foundation elements supporting foundation walls, isolated interior posts detailed so the element is not subject to lateral loads or exterior decks and patios are not subject to interconnection where the soils are of adequate stiffness, subject to the approval of the building official.

**1810.4 Installation.** Deep foundations shall be installed in accordance with Section 1810.4. Where a single deep foundation element comprises two or more sections of different materials or different types spliced together, each section shall satisfy the applicable conditions of installation.

**1810.4.1 Structural integrity.** Deep foundation elements shall be installed in such a manner and sequence as to prevent distortion or damage that would adversely affect the structural integrity of adjacent structures or of foundation elements being installed or already in place and as to avoid compacting the surrounding soil to the extent that other foundation elements cannot be installed properly.

**1810.4.1.1 Compressive strength of precast concrete piles.** A precast concrete pile shall not be driven before the concrete has attained a compressive strength of not less than 75 percent of the specified compressive strength ( $f'_c$ ), but not less than the strength sufficient to withstand handling and driving forces.

**1810.4.1.2 Shafts in unstable soils.** Where cast-in-place deep foundation elements are formed through unstable soils, the open hole shall be stabilized by a casing, slurry, or other approved method prior to placing the concrete. Where the casing is withdrawn during concreting, the level of concrete shall be maintained above the bottom of the casing at a sufficient height to offset any hydrostatic or lateral soil pressure. Driven casings shall be mandrel driven their full length in contact with the surrounding soil.

**1810.4.1.3 Driving near uncased concrete.** Deep foundation elements shall not be driven within six element diameters center to center in granular soils or within one-half the element length in cohesive soils of an uncased element filled with concrete less than 48 hours old unless approved by the building official. If driving near uncased concrete elements causes the concrete surface in any completed element to rise or drop significantly or bleed additional water, the completed element shall be replaced.

**1810.4.1.4 Driving near cased concrete.** Deep foundation elements shall not be driven within four and one-half average diameters of a cased element filled with concrete less than 24 hours old unless approved by the building official. Concrete shall not be placed in casings within heave range of driving.

**1810.4.1.5 Defective timber piles.** *[OSHPD 1R, 2 & 5] Not permitted by OSHPD.* Any substantial sudden change in rate of penetration of a timber pile shall be investigated for possible damage. If the sudden change in rate of penetration cannot be correlated to soil strata, the pile shall be removed for inspection or rejected.

**1810.4.2 Identification.** Deep foundation materials shall be identified for conformity to the specified grade with this identity maintained continuously from the point of manufacture to the point of installation or shall be tested by an approved agency to determine conformity to the specified grade. The approved agency shall furnish an affidavit of compliance to the building official.

**1810.4.3 Location plan.** A plan showing the location and designation of deep foundation elements by an identification system shall be filed with the building official prior to installation of such elements. Detailed records for elements shall bear an identification corresponding to that shown on the plan.

**1810.4.4 Preexcavation.** The use of jetting, augering or other methods of preexcavation shall be subject to the approval of the building official. Where permitted, preexcavation shall be carried out in the same manner as used for deep foundation elements subject to load tests and in such a manner that will not impair the carrying capacity of the elements already in place or damage adjacent structures. Element tips shall be advanced below the preexcavated depth until the required resistance or penetration is obtained.

**1810.4.5 Vibratory driving.** Vibratory drivers shall only be used to install deep foundation elements where the element load capacity is verified by load tests in accordance with Section 1810.3.3.1.2. The installation of production elements shall be controlled according to power consumption, rate of penetration or other approved means that ensure element capacities equal or exceed those of the test elements.

**Exceptions:**

1. The pile installation is completed by driving with an impact hammer in accordance with Section 1810.3.3.1.1.
2. The pile is to be used only for lateral resistance.

**1810.4.6 Heaved elements.** Deep foundation elements that have heaved during the driving of adjacent elements shall be redriven as necessary to develop the required capacity and penetration, or the capacity of the element shall be verified by load tests in accordance with Section 1810.3.3.1.2.

**1810.4.7 Enlarged base cast-in-place elements.** Enlarged bases for cast-in-place deep foundation elements formed by compacting concrete or by driving a precast base shall be formed in or driven into granular soils. Such elements shall be constructed in the same manner as successful prototype test elements driven for the project. Shafts extending through peat or other organic soil shall be encased in a permanent steel casing. Where a cased shaft is used, the shaft shall be adequately reinforced to resist column action or the annular space around the shaft shall be filled sufficiently to reestablish lateral support by the soil. Where heave occurs, the element shall be replaced unless it is demonstrated that the element is undamaged and capable of carrying twice its design load.

**1810.4.8 Hollow-stem augered, cast-in-place elements.** An indicator pile program shall be performed to confirm the installation procedure and to determine the pile capacity by static load testing. Upon completion of the pile load testing, at least one test pile shall be entirely exhumed to examine the pile integrity. Prior to the installation of production piles, the results of the testing, and confirmation or revision to the pile capacity shall be determined. Where concrete or

grout is placed by pumping through a hollow-stem auger, the auger shall be permitted to rotate in a clockwise direction during withdrawal. As the auger is withdrawn at a steady rate or in increments not to exceed 1 foot (305 mm), concreting or grouting pumping pressures shall be measured and maintained high enough at all times to offset hydrostatic and lateral earth pressures. Concrete or grout volumes shall be measured to ensure that the volume of concrete or grout placed in each element is equal to or greater than the theoretical volume of the hole created by the auger. Where the installation process of any element is interrupted or a loss of concreting or grouting pressure occurs, the element shall be redrilled to 5 feet (1524 mm) below the elevation of the tip of the auger when the installation was interrupted or concrete or grout pressure was lost and reformed. Augered cast-in-place elements shall not be installed within six diameters center to center of an element filled with concrete or grout less than 12 hours old, unless approved by the building official. If the concrete or grout level in any completed element drops due to installation of an adjacent element, the element shall be replaced.

**1810.4.9 Socketed drilled shafts.** The rock socket and pipe or tube casing of socketed drilled shafts shall be thoroughly cleaned of foreign materials before filling with concrete. Steel cores shall be bedded in cement grout at the base of the rock socket.

**1810.4.10 Micropiles.** Micropile deep foundation elements shall be permitted to be formed in holes advanced by rotary or percussive drilling methods, with or without casing. The elements shall be grouted with a fluid cement grout. The grout shall be pumped through a tremie pipe extending to the bottom of the element until grout of suitable quality returns at the top of the element. The following requirements apply to specific installation methods:

1. For micropiles grouted inside a temporary casing, the reinforcing bars shall be inserted prior to withdrawal of the casing. The casing shall be withdrawn in a controlled manner with the grout level maintained at the top of the element to ensure that the grout completely fills the drill hole. During withdrawal of the casing, the grout level inside the casing shall be monitored to verify that the flow of grout inside the casing is not obstructed.
2. For a micropile or portion thereof grouted in an open drill hole in soil without temporary casing, the minimum design diameter of the drill hole shall be verified by a suitable device during grouting.
3. For micropiles designed for end bearing, a suitable means shall be employed to verify that the bearing surface is properly cleaned prior to grouting.
4. Subsequent micropiles shall not be drilled near elements that have been grouted until the grout has had sufficient time to harden.
5. Micropiles shall be grouted as soon as possible after drilling is completed.
6. For micropiles designed with a full-length casing, the casing shall be pulled back to the top of the bond

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

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

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

1. Hydraulic ram method:

*Anchors tested with a hydraulic jack or spring loaded devices shall maintain the test load for a minimum of 15 seconds and shall exhibit no discernable movement during the tension test, e.g., as evidenced by loosening of the washer under the nut.*

*The testing device shall not restrict the concrete shear cone type failure mechanism from occurring.*

**Exception:** When denoted accordingly on the approved construction documents, adhesive anchors complying with ACI 318 Equation 17.8.2a and for which concrete breakout does not control the design tensile strength may be tested with apparatus support locations closer than 1.5 times the anchor embedment depth.

2. Torque wrench method:

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

**1901.4 Composite structural steel and concrete structures.** Systems of structural steel acting compositely with reinforced concrete shall be designed in accordance with Section 2206 of this code.

**1901.5 Construction documents.** The construction documents for structural concrete construction shall include:

1. The specified compressive strength of concrete at the stated ages or stages of construction for which each concrete element is designed.
2. The specified strength or grade of reinforcement.
3. The size and location of structural elements, reinforcement and anchors.
4. Provision for dimensional changes resulting from creep, shrinkage and temperature.
5. The magnitude and location of prestressing forces.
6. Anchorage length of reinforcement and location and length of lap splices.
7. Type and location of mechanical and welded splices of reinforcement.
8. Details and location of contraction or isolation joints specified for plain concrete.

9. Minimum concrete compressive strength at time of posttensioning.
10. Stressing sequence for posttensioning tendons.
11. For structures assigned to Seismic Design Category D, E or F, a statement if slab on grade is designed as a structural diaphragm.

**1901.6 Special inspections and tests.** Special inspections and tests of concrete elements of buildings and structures and concreting operations shall be as required by Chapter 17.

**1901.7 Tolerances for structural concrete.** Where not indicated in construction documents, structural tolerances for concrete structural elements shall be in accordance with this section.

**1901.7.1 Cast-in-place concrete tolerances.** Structural tolerances for cast-in-place concrete structural elements shall be in accordance with ACI 117.

**Exceptions:**

1. Group R-3 detached one- or two-family dwellings are not required to comply with this section.
2. Shotcrete is not required to comply with this section.

**1901.7.2 Precast concrete tolerances.** Structural tolerances for precast concrete structural elements shall be in accordance with ACI ITG-7.

**Exception:** Group R-3 detached one- or two-family dwellings are not required to comply with this section.

## SECTION 1902 COORDINATION OF TERMINOLOGY

**1902.1 General.** Coordination of terminology used in ACI 318 and ASCE 7 shall be in accordance with Sections 1902.1.1 and 1902.1.2.

**1902.1.1 Design displacement.** Design displacement at each level shall be the total lateral deflection at the level calculated for the design earthquake using the procedures defined in Section 12.8.6 of ASCE 7.

**1902.1.2 Special structural wall.** Special structural walls made of cast-in-place or precast concrete shall comply with the requirements of Sections 18.2.4 through 18.2.8, 18.10 and 18.11 of ACI 318, as applicable, in addition to the requirements for ordinary reinforced concrete structural walls or ordinary precast structural walls, as applicable. Where ASCE 7 refers to a "special reinforced concrete shear wall," it shall be deemed to mean a "special structural wall."

## SECTION 1903 SPECIFICATIONS FOR TESTS AND MATERIALS

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

**Exception:** The following standards as referenced in Chapter 35 shall be permitted to be used.

1. ASTM C150

2. ASTM C595
3. ASTM C1157

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

**1903.3 Glass fiber-reinforced concrete.** *Glass fiber-reinforced concrete (GFRC) and the materials used in such concrete shall be in accordance with the PCI MNL 128 standard.*

**1903.4 Flat wall insulating concrete form (ICF) systems.** *IOSHPD 1R, 2 & 5J* Not Permitted by OSHPD. *Insulating concrete form material used for forming flat concrete walls shall conform to ASTM E2634.*

**1903.5 Aggregates - IOSHPD 1R, 2 & 5J Modify ACI 318 Section 26.4.1.2.1(a). (1) as follows:**

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

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

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

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

**1903.7 Steel fiber reinforcement - IOSHPD 1R, 2 & 5J Not permitted by OSHPD.**

**1903.8 Welding of reinforcing bars - IOSHPD 1R, 2 & 5J Modify ACI 318 Section 26.6.4.1(b) by adding the following:**

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

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

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

## SECTION 1904 DURABILITY REQUIREMENTS

**1904.1 Structural concrete.** Structural concrete shall conform to the durability requirements of ACI 318.

**Exception:** *For Group R-2 and R-3 occupancies not more than three stories above grade plane, the specified compressive strength,  $f'_c$ , for concrete in basement walls, foundation walls, exterior walls and other vertical surfaces exposed to the weather shall be not less than 3,000 psi (20.7 MPa).*

**1904.2 Nonstructural concrete.** *The registered design professional shall assign nonstructural concrete a freeze-thaw exposure class, as defined in ACI 318, based on the anticipated exposure of nonstructural concrete. Nonstructural concrete shall have a minimum specified compressive strength,  $f'_c$ , of 2,500 psi (17.2 MPa) for Class F0; 3,000 psi (20.7 MPa) for Class F1; and 3,500 psi (24.1 MPa) for Classes F2 and F3. Nonstructural concrete shall be air entrained in accordance with ACI 318.*

## SECTION 1905 MODIFICATIONS TO ACI 318

**1905.1 General.** The text of ACI 318 shall be modified as indicated in Sections 1905.1.1 through 1905.1.12 and as modified in this Code.

**1905.1.1 ACI 318, Section 2.3.** Modify existing definitions and add the following definitions to ACI 318, Section 2.3.

**DETAILED PLAIN CONCRETE STRUCTURAL WALL.** A wall complying with the requirements of Chapter 14, including 14.6.2.

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

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

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

**1905.1.2 ACI 318, Section 18.2.1.** Modify ACI 318 Sections 18.2.1.2 and 18.2.1.6 to read as follows:

- 18.2.1.2 – Structures assigned to Seismic Design Category A shall satisfy requirements of Chapters 1 through 17 and 19 through 26; Chapter 18 does not apply. Structures assigned to Seismic Design Category B, C, D, E or F shall satisfy 18.2.1.3 through 18.2.1.7, as applicable. Except for structural elements of plain concrete complying with Section 1905.1.7 of the California Building Code, structural

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*elements of plain concrete are prohibited in structures assigned to Seismic Design Category C, D, E or F.*

- 18.2.1.6 – Structural systems designated as part of the *seismic force-resisting system* shall be restricted to those *permitted by ASCE 7*. Except for *Seismic Design Category A*, for which Chapter 18 does not apply, the following provisions shall be satisfied for each structural system designated as part of the *seismic force-resisting system*, regardless of the *seismic design category*:
  - (a) Ordinary moment frames shall satisfy 18.3.
  - (b) Ordinary reinforced concrete structural walls and ordinary precast structural walls need not satisfy any provisions in Chapter 18.
  - (c) Intermediate moment frames shall satisfy 18.4.
  - (d) Intermediate precast structural walls shall satisfy 18.5.
  - (e) Special moment frames shall satisfy 18.6 through 18.9.
  - (f) Special structural walls shall satisfy 18.10.
  - (g) Special structural walls constructed using precast concrete shall satisfy 18.11.

Special moment frames and special structural walls shall also satisfy 18.2.4 through 18.2.8.

**1905.1.3 ACI 318, Section 18.5.** Modify ACI 318, Section 18.5 by adding new Section 18.5.2.2 and renumbering existing Sections 18.5.2.2 and 18.5.2.3 to become 18.5.2.3 and 18.5.2.4, respectively.

*18.5.2.2 – Connections that are designed to yield shall be capable of maintaining 80 percent of their design strength at the deformation induced by the design displacement or shall use Type 2 mechanical splices.*

*18.5.2.3 – Elements of the connection that are not designed to yield shall develop at least 1.5  $S_y$ .*

*18.5.2.4 – In structures assigned to SDC D, E or F, wall piers shall be designed in accordance with 18.10.8 or 18.14 in ACI 318.*

**1905.1.4 ACI 318, Section 18.11.** Modify ACI 318, Section 18.11.2.1 to read as follows:

*18.11.2.1 – Special structural walls constructed using precast concrete shall satisfy all the requirements of 18.10 for cast-in-place special structural walls in addition to 18.5.2.*

**1905.1.5 ACI 318, Section 18.13.1.1.** Modify ACI 318, Section 18.13.1.1 to read as follows:

*18.13.1.1 – Foundations resisting earthquake-induced forces or transferring earthquake-induced forces between a structure and ground shall comply with the requirements of 18.13 and other applicable provisions of ACI 318 unless modified by Chapter 18 of the California Building Code.*

**1905.1.6 ACI 318, Section 14.6.** Modify ACI 318, Section 14.6 by adding new Section 14.6.2 to read as follows:

*14.6.2 – Detailed plain concrete structural walls.*

*14.6.2.1 – Detailed plain concrete structural walls are walls conforming to the requirements of ordinary structural plain concrete walls and 14.6.2.2.*

*14.6.2.2 – Reinforcement shall be provided as follows:*

- *Vertical reinforcement of at least 0.20 square inch (129 mm<sup>2</sup>) in cross-sectional area shall be provided continuously from support to support at each corner, at each side of each opening and at the ends of walls. The continuous vertical bar required beside an opening is permitted to substitute for one of the two No. 5 bars required by 14.6.1.*
- *Horizontal reinforcement at least 0.20 square inch (129 mm<sup>2</sup>) in cross-sectional area shall be provided:*
  - 1. Continuously at structurally connected roof and floor levels and at the top of walls.*
  - 2. At the bottom of load-bearing walls or in the top of foundations where doweled to the wall.*
  - 3. At a maximum spacing of 120 inches (3048 mm).*

*Reinforcement at the top and bottom of openings, where used in determining the maximum spacing specified in Item 3 above, shall be continuous in the wall.*

**1905.1.7 ACI 318, Section 14.1.4.** Delete ACI 318, Section 14.1.4, and replace with the following:

*14.1.4 – Plain concrete in structures assigned to Seismic Design Category C, D, E or F.*

*14.1.4.1 – Structures assigned to Seismic Design Category C, D, E or F shall not have elements of structural plain concrete, except as follows:*

- (a) *Concrete used for fill with a minimum cement content of two (2) sacks of Portland cement per cubic yard.*
- (b) *Isolated footings of plain concrete supporting pedestals or columns are permitted, provided the projection of the footing beyond the face of the supported member does not exceed the footing thickness.*
- (c) *Plain concrete footings supporting walls are permitted provided the footings have at least two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. A minimum of one bar shall be provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.*

**Exception:** *In detached one- and two-family dwellings three stories or less in height and constructed with stud-bearing walls, plain concrete footings with at least two continu-*

ous longitudinal reinforcement bars not smaller than No. 4 are permitted to have a total area of less than 0.002 times the gross cross-sectional area of the footing.

**1905.1.8 ACI 318, Section 17.2.3.** Modify ACI 318 Sections 17.10.5.2, 17.10.5.3(d) and 17.10.6.2 to read as follows:

- 17.10.5.2 – *Where the tensile component of the strength-level earthquake force applied to anchors exceeds 20 percent of the total factored anchor tensile force associated with the same load combination, anchors and their attachments shall be designed in accordance with 17.10.5.3. The anchor design tensile strength shall be determined in accordance with 17.10.5.4.*

**Exception:** *Anchors designed to resist wall out-of-plane forces with design strengths equal to or greater than the force determined in accordance with ASCE 7 Equation 12.11-1 or 12.14-10 shall be deemed to satisfy Section 17.10.5.3(d).*

- 17.10.5.3(d) – *The anchor or group of anchors shall be designed for the maximum tension obtained from design load combinations that include E, with E increased by  $\Omega_0$ . The anchor design tensile strength shall be calculated from 17.10.5.4.*
- 17.10.6.2 – *Where the shear component of the strength-level earthquake force applied to anchors exceeds 20 percent of the total factored anchor shear force associated with the same load combination, anchors and their attachments shall be designed in accordance with 17.10.6.3. The anchor design shear strength for resisting earthquake forces shall be determined in accordance with 17.7.*

**Exceptions:**

1. *For the calculation of the in-plane shear strength of anchor bolts attaching wood sill plates of bearing or nonbearing walls of light-frame wood structures to foundations or foundation stem walls, the in-plane shear strength in accordance with 17.7.2 and 17.7.3 need not be computed and 17.10.6.3 shall be deemed to be satisfied provided all of the following are met:*
  - 1.1. *The allowable in-plane shear strength of the anchor is determined in accordance with ANSI/AWC NDS Table 12E for lateral design values parallel to grain.*
  - 1.2. *The maximum anchor nominal diameter is  $\frac{5}{8}$  inch (16 mm).*
  - 1.3. *Anchor bolts are embedded into concrete a minimum of 7 inches (178 mm).*
  - 1.4. *Anchor bolts are located a minimum of  $1\frac{3}{4}$  inches (45 mm) from the edge of the concrete parallel to the length of the wood sill plate.*

1.5. *Anchor bolts are located a minimum of 15 anchor diameters from the edge of the concrete perpendicular to the length of the wood sill plate.*

1.6. *The sill plate is 2-inch (51 mm) or 3-inch (76 mm) nominal thickness.*

2. *For the calculation of the in-plane shear strength of anchor bolts attaching cold-formed steel track of bearing or nonbearing walls of light-frame construction to foundations or foundation stem walls, the in-plane shear strength in accordance with 17.7.2 and 17.7.3 need not be computed and 17.10.6.3 shall be deemed to be satisfied provided all of the following are met:*
  - 2.1. *The maximum anchor nominal diameter is  $\frac{5}{8}$  inch (16 mm).*
  - 2.2. *Anchors are embedded into concrete a minimum of 7 inches (178 mm).*
  - 2.3. *Anchors are located a minimum of  $1\frac{3}{4}$  inches (45 mm) from the edge of the concrete parallel to the length of the track.*
  - 2.4. *Anchors are located a minimum of 15 anchor diameters from the edge of the concrete perpendicular to the length of the track.*
  - 2.5. *The track is 33 to 68 mil (0.84 mm to 1.73 mm) designation thickness.*

*Allowable in-plane shear strength of exempt anchors, parallel to the edge of concrete, shall be permitted to be determined in accordance with AISI S100 Section J3.3.1.*

3. *In light-frame construction bearing or nonbearing walls, shear strength of concrete anchors less than or equal to 1 inch [25 mm] in diameter attaching sill plate or track to foundation or foundation stem wall need not satisfy 17.10.6.3(a) through (c) when the design strength of the anchors is determined in accordance with 17.7.2.1(c).*

**1905.1.9 ACI 318, Section 18.7.5.** Modify ACI 318, Section 18.7.5, by adding Section 18.7.5.8 to read as follows:

18.7.5.8 – *Where the calculated point of contraflexure is not within the middle half of the member clear height, provide transverse reinforcement as specified in ACI 318 Section 18.7.5.1 Items (a) through (c), over the full height of the member.*

**1905.1.10 ACI 318, Section 18.7.5.** Modify ACI 318, Section 18.7.5, by adding Section 18.7.5.9 to read as follows:

18.7.5.9 – *At any section where the design strength,  $\phi P_n$ , of the column is less than the sum of the shears  $V_e$  computed in accordance with ACI 318 Sections 18.6.5.1 and 18.7.6.1.1 for all the beams framing into*



the column above the level under consideration, transverse reinforcement as specified in ACI 318 Sections 18.7.5.1 through 18.7.5.3 shall be provided. For beams framing into opposite sides of the column, the moment components may be assumed to be of opposite sign. For determination of the design strength,  $\phi P_n$ , of the column, these moments may be assumed to result from the deformation of the frame in any one principal axis.

**1905.1.11 ACI 318, Section 18.10.4.** Modify ACI 318, Section 18.10.4, by adding Section 18.10.4.7 to read as follows:

18.10.4.7 – Walls and portions of walls with  $P_u > 0.35P_o$  shall not be considered to contribute to the calculated strength of the structure for resisting earthquake-induced forces. Such walls shall conform to the requirements of ACI 318, Section 18.14 for wall piers.

**1905.1.12 ACI 318, Section 18.12.6.** Modify ACI 318, Section 18.12.6, by adding Section 18.12.6.2 to read as follows:

18.12.6.2 – Collector and boundary elements in topping slabs placed over precast floor and roof elements shall not be less than 3 inches (76 mm) or  $6d_b$  thick, where  $d_b$  is the diameter of the largest reinforcement in the topping slab. [CBC Section 1909.3.5]

## SECTION 1906 FOOTINGS FOR LIGHT-FRAME CONSTRUCTION

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

**1906.1 Plain concrete footings.** The design and construction of structural plain concrete, both cast-in-place and precast, shall comply with the minimum requirements of ACI 318, as modified in CBC Section 1905.

**Exception:** For Group R-3 occupancies and buildings of other occupancies less than two stories above grade plane of light-frame construction, the required footing thickness of ACI 318 is permitted to be reduced to 6 inches (152 mm), provided that the footing does not extend more than 4 inches (102 mm) on either side of the supported wall. This exception shall not apply to structural elements designed to resist seismic lateral forces for structures assigned to Seismic Design Category D, E or F.

## SECTION 1907 MINIMUM SLAB PROVISIONS

**1907.1 General.** The thickness of concrete floor slabs supported directly on the ground shall be not less than  $3\frac{1}{2}$  inches (89 mm). A 6-mil (0.006 inch; 0.15 mm) polyethylene vapor retarder with joints lapped not less than 6 inches (152 mm) shall be placed between the base course or subgrade and the concrete floor slab, or other approved equivalent methods or materials shall be used to retard vapor transmission through the floor slab.

**Exception:** A vapor retarder is not required:

1. For detached structures accessory to occupancies in Group R-3, such as garages, utility buildings or other unheated facilities.

2. For unheated storage rooms having an area of less than 70 square feet (6.5 m<sup>2</sup>) and carports attached to occupancies in Group R-3.
3. For buildings of other occupancies where migration of moisture through the slab from below will not be detrimental to the intended occupancy of the building.
4. For driveways, walks, patios and other flatwork that will not be enclosed at a later date.
5. Where approved based on local site conditions.

**1907.1.1 [HCD 1] Capillary break.** When a vapor retarder is required, a capillary break shall be installed in accordance with the California Green Building Standards Code (CALGreen), Chapter 4, Division 4.5.

## SECTION 1908 SHOTCRETE

**1908.1 General.** Shotcrete shall be in accordance with the requirements of ACI 318 [OSHPD 1R, 2B & 5] and the provisions of ACI 506R. The evaluation of the shotcrete mockup panel to qualify bar clearance dimensions in accordance with ACI 318 Section 25.2.7 or contact lap splices in accordance with ACI 318 Section 25.5.1.7 shall be in accordance with the requirements of ACI 506.4R with a core quality category of Very Good given in ACI 506.6T.

**1908.2 Tests and inspections.** [OSHPD 1R, 2B & 5] Preconstruction tests of one or more shotcrete mockup panels prepared in accordance with Section 1705.3.9.2 are required. In addition to testing requirements in ACI 318, special inspection and testing shall be in accordance with Section 1705.3.9.

**1908.3 Forms and ground wires for shotcrete.** [OSHPD 1R, 2B & 5] Forms for shotcrete shall be substantial and rigid. Forms shall be built and placed so as to permit the escape of air and rebound.

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

## SECTION 1909 ADDITIONAL REQUIREMENTS FOR COMMUNITY COLLEGES [DSA-SS/CC]

**1909.1 General.**

**1909.1.1 Construction documents.** Openings larger than 12 inches (305 mm) in any dimension shall be detailed on the structural drawings.

**1909.2 Tests and materials.** Where required, special inspections and tests shall be in accordance with Chapter 17A and this section.

**1909.2.1 Aggregates** - Modify ACI 318 Section 26.4.1.2.1(a). (1) as follows:

(1) **Normal weight aggregate:** Aggregate shall be non-reactive as determined by one of the methods in ASTM C33 Appendix XI Methods for Evaluating Potential for Deleterious Expansion Due to Alkali Reactivity of an

*Aggregate. Aggregates deemed to be deleterious or potentially deleterious may be used with the addition of a material that has been shown to prevent harmful expansion in accordance with Appendix XI of ASTM C33, when approved by the building official.*

**1909.2.2 Steel fiber reinforcement - Not permitted.**

**1909.2.3 Cementitious material.** The concrete supplier shall furnish to the enforcement agency certification that the cement proposed for use on the project has been manufactured and tested in compliance with the requirements of ASTM C150 for portland cement and ASTM C595 or ASTM C1157 for blended hydraulic cement, whichever is applicable. When a mineral admixture or ground granulated blast-furnace slag is proposed for use, the concrete supplier shall furnish to the enforcement agency certification that they have been manufactured and tested in compliance with ASTM C618 or ASTM C989, whichever is applicable. The concrete producer shall provide copies of the cementitious material supplier's certificate of compliance that represents the materials used by date of shipment for concrete. Cementitious materials without certification of compliance shall not be used.

**1909.2.4 Tests of reinforcing bars.** Samples shall be taken from bundles as delivered from the mill, with the bundles identified as to heat number and the accompanying mill certificate. One tensile test and one bend test shall be made from a sample from each 10 tons (9080 kg) or fraction thereof of each size of reinforcing steel.

Where positive identification of the heat number cannot be made or where random samples are to be taken, one series of tests shall be made from each 2<sup>1</sup>/<sub>2</sub> tons (2270 kg) or fraction thereof of each size of reinforcing steel.

Tests of reinforcing bars may be waived by the structural engineer with the approval of the Building Official for one-story buildings or non-building structures provided they are identified in the construction documents and certified mill test reports are provided to the inspector of record for each shipment of such reinforcement.

**1909.2.5 Tests for prestressing steel and anchorage.** All wires or bars of each size from each mill heat and all strands from each manufactured reel to be shipped to the site shall be assigned an individual lot number and shall be tagged in such a manner that each lot can be accurately identified at the job site. Each lot of tendon and anchorage assemblies and bar couplers to be installed shall be likewise identified.

The following samples of materials and tendons selected by the engineer or the designated testing laboratory from the prestressing steel at the plant or job site shall be furnished by the contractor and tested by an approved independent testing agency:

1. For wire, strand or bars, 7-foot-long (2134 mm) samples shall be taken of the coil of wire or strand reel or rods. A minimum of one random sample per 5,000 pounds (2270 kg) of each heat or lot used on the job shall be selected.
2. For prefabricated prestressing tendons other than bars, one completely fabricated tendon 10 feet (3048

mm) in length between grips with anchorage assembly at one end shall be furnished for each size and type of tendon and anchorage assembly.

Variations of the bearing plate size need not be considered.

The anchorages of unbonded tendons shall develop at least 95 percent of the minimum specified ultimate strength of the prestressing steel. The total elongation of the tendon under ultimate load shall not be less than 2 percent measured in a minimum gage length of 10 feet (3048 mm).

Anchorages of bonded tendons shall develop at least 90 percent of the minimum specified strength of the prestressing steel tested in an unbonded state. All couplings shall develop at least 95 percent of the minimum specified strength of the prestressing steel and shall not reduce the elongation at rupture below the requirements of the tendon itself.

3. If the prestressing tendon is a bar, one 7-foot (2134 mm) length complete with one end anchorage shall be furnished and, in addition, if couplers are to be used with the bar, two 4-foot (1219 mm) lengths of bar fabricated to fit and equipped with one coupler shall be furnished.
4. Mill tests of materials used for end anchorages shall be furnished. In addition, at least one Brinnell hardness test shall be made of each thickness of bearing plate.

**1909.2.6 Composite construction cores.** Cores of the completed composite concrete construction shall be taken to demonstrate the shear strength along the contact surfaces. The cores shall be tested when the cast-in-place concrete is approximately 28 days old and shall be tested by a shear loading parallel to the joint between the precast concrete and the cast-in-place concrete. The minimum unit shear strength of the contact surface area of the core shall not be less than 100 psi (689 kPa).

At least one core shall be taken from each building for each 5,000 square feet (465 m<sup>2</sup>) of area of composite concrete construction and not less than three cores shall be taken from each project. The architect or structural engineer in responsible charge of the project or his or her representative shall designate the location for sampling.

**1909.2.7 Tests for post-installed anchors in concrete.** When post-installed anchors are used in lieu of cast-in-place bolts, the installation verification test loads frequency and acceptance criteria shall be in accordance with this section.

**1909.2.7.1 General.** Test loads or torques and acceptance criteria shall be shown on the construction documents.

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

**1909.2.7.2 Testing procedure.** The test procedure shall be as permitted by an approved evaluation report using

**2111.8.1 Damper.** Masonry fireplaces shall be equipped with a ferrous metal damper located not less than 8 inches (203 mm) above the top of the fireplace opening. Dampers shall be installed in the fireplace or at the top of the flue venting the fireplace, and shall be operable from the room containing the fireplace. Damper controls shall be permitted to be located in the fireplace.

**2111.9 Smoke chamber walls.** Smoke chamber walls shall be constructed of solid masonry units, hollow masonry units grouted solid, stone or concrete. The total minimum thickness of front, back and sidewalls shall be 8 inches (203 mm) of solid masonry. The inside surface shall be parged smooth with refractory mortar conforming to ASTM C199. Where a lining of firebrick not less than 2 inches (51 mm) thick, or a lining of vitrified clay not less than  $\frac{5}{8}$  inch (15.9 mm) thick, is provided, the total minimum thickness of front, back and sidewalls shall be 6 inches (152 mm) of solid masonry, including the lining. Firebrick shall conform to ASTM C1261 and shall be laid with refractory mortar conforming to ASTM C199. Vitrified clay linings shall conform to ASTM C315.

**2111.9.1 Smoke chamber dimensions.** The inside height of the smoke chamber from the fireplace throat to the beginning of the flue shall be not greater than the inside width of the fireplace opening. The inside surface of the smoke chamber shall not be inclined more than 45 degrees (0.76 rad) from vertical where prefabricated smoke chamber linings are used or where the smoke chamber walls are rolled or sloped rather than corbeled. Where the inside surface of the smoke chamber is formed by corbeled masonry, the walls shall not be corbeled more than 30 degrees (0.52 rad) from vertical.

**2111.10 Hearth and hearth extension.** Masonry fireplace hearths and hearth extensions shall be constructed of concrete or masonry, supported by noncombustible materials, and reinforced to carry their own weight and all imposed loads. Combustible material shall not remain against the underside of hearths or hearth extensions after construction.

**2111.10.1 Hearth thickness.** The minimum thickness of fireplace hearths shall be 4 inches (102 mm).

**2111.10.2 Hearth extension thickness.** The minimum thickness of hearth extensions shall be 2 inches (51 mm).

**Exception:** Where the bottom of the firebox opening is raised not less than 8 inches (203 mm) above the top of the hearth extension, a hearth extension of not less than  $\frac{3}{8}$ -inch-thick (9.5 mm) brick, concrete, stone, tile or other approved noncombustible material is permitted.

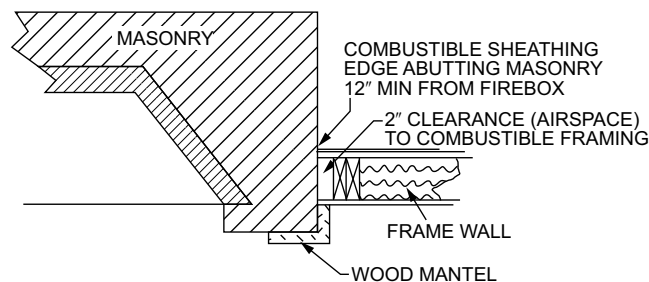
**2111.11 Hearth extension dimensions.** Hearth extensions shall extend not less than 16 inches (406 mm) in front of, and not less than 8 inches (203 mm) beyond, each side of the fireplace opening. Where the fireplace opening is 6 square feet (0.557 m<sup>2</sup>) or larger, the hearth extension shall extend not less than 20 inches (508 mm) in front of, and not less than 12 inches (305 mm) beyond, each side of the fireplace opening.

**2111.12 Fireplace clearance.** Any portion of a masonry fireplace located in the interior of a building or within the exterior wall of a building shall have a clearance to combustibles of not less than 2 inches (51 mm) from the front faces

and sides of masonry fireplaces and not less than 4 inches (102 mm) from the back faces of masonry fireplaces. The airspace shall not be filled, except to provide fireblocking in accordance with Section 2111.13.

#### Exceptions:

1. Masonry fireplaces listed and labeled for use in contact with combustibles in accordance with UL 127 and installed in accordance with the manufacturer's instructions are permitted to have combustible material in contact with their exterior surfaces.
2. Where masonry fireplaces are constructed as part of masonry or concrete walls, combustible materials shall not be in contact with the masonry or concrete walls less than 12 inches (306 mm) from the inside surface of the nearest firebox lining.
3. Exposed combustible trim and the edges of sheathing materials, such as wood siding, flooring and dry-wall, are permitted to abut the masonry fireplace sidewalls and hearth extension, in accordance with Figure 2111.12, provided that such combustible trim or sheathing is not less than 12 inches (306 mm) from the inside surface of the nearest firebox lining.
4. Exposed combustible mantels or trim is permitted to be placed directly on the masonry fireplace front surrounding the fireplace opening, provided that such combustible materials shall not be placed within 6 inches (153 mm) of a fireplace opening. Combustible material directly above and within 12 inches (305 mm) of the fireplace opening shall not project more than  $\frac{1}{8}$  inch (3.2 mm) for each 1-inch (25 mm) distance from such opening. Combustible materials located along the sides of the fireplace opening that project more than  $1\frac{1}{2}$  inches (38 mm) from the face of the fireplace shall have an additional clearance equal to the projection.



Note: 1 inch = 25.4 mm

**FIGURE 2111.12**  
**ILLUSTRATION OF EXCEPTION TO**  
**FIREPLACE CLEARANCE PROVISION**

**2111.13 Fireplace fireblocking.** All spaces between fireplaces and floors and ceilings through which fireplaces pass shall be fireblocked with noncombustible material securely fastened in place. The fireblocking of spaces between wood joists, beams or headers shall be to a depth of 1 inch (25 mm) and shall only be placed on strips of metal or metal lath laid

across the spaces between combustible material and the chimney.

**2111.14 Exterior air.** Factory-built or masonry fireplaces covered in this section shall be equipped with an exterior air supply to ensure proper fuel combustion unless the room is mechanically ventilated and controlled so that the indoor pressure is neutral or positive.

**2111.14.1 Factory-built fireplaces.** Exterior combustion air ducts for factory-built fireplaces shall be listed components of the fireplace, and installed according to the fireplace manufacturer's instructions.

**2111.14.2 Masonry fireplaces.** Listed combustion air ducts for masonry fireplaces shall be installed according to the terms of their listing and manufacturer's instructions.

**2111.14.3 Exterior air intake.** The exterior air intake shall be capable of providing all combustion air from the exterior of the dwelling. The exterior air intake shall not be located within a garage, attic, basement or crawl space of the dwelling nor shall the air intake be located at an elevation higher than the firebox. The exterior air intake shall be covered with a corrosion-resistant screen of 1/4-inch (6.4 mm) mesh.

**2111.14.4 Clearance.** Unlisted combustion air ducts shall be installed with a minimum 1-inch (25 mm) clearance to combustibles for all parts of the duct within 5 feet (1524 mm) of the duct outlet.

**2111.14.5 Passageway.** The combustion air passageway shall be not less than 6 square inches (3870 mm<sup>2</sup>) and not more than 55 square inches (0.035 m<sup>2</sup>), except that combustion air systems for listed fireplaces or for fireplaces tested for emissions shall be constructed according to the fireplace manufacturer's instructions.

**2111.14.6 Outlet.** The exterior air outlet is permitted to be located in the back or sides of the firebox chamber or within 24 inches (610 mm) of the firebox opening on or near the floor. The outlet shall be closable and designed to prevent burning material from dropping into concealed combustible spaces.

## SECTION 2112 MASONRY HEATERS

**2112.1 Definition.** A masonry heater is a heating appliance constructed of concrete or solid masonry, hereinafter referred to as "masonry," which is designed to absorb and store heat from a solid fuel fire built in the firebox by routing the exhaust gases through internal heat exchange channels in which the flow path downstream of the firebox includes flow in either a horizontal or downward direction before entering the chimney and which delivers heat by radiation from the masonry surface of the heater.

**2112.2 Installation.** Masonry heaters shall be installed in accordance with this section and comply with one of the following:

1. Masonry heaters shall comply with the requirements of ASTM E1602.

2. Masonry heaters shall be listed and labeled in accordance with UL 1482 or EN 15250 and installed in accordance with the manufacturer's instructions.

**2112.3 Footings and foundation.** The firebox floor of a masonry heater shall be a minimum thickness of 4 inches (102 mm) of noncombustible material and be supported on a noncombustible footing and foundation in accordance with Section 2113.2.

**2112.4 Seismic reinforcing.** In structures assigned to Seismic Design Category D, E or F, masonry heaters shall be anchored to the masonry foundation in accordance with Section 2113.3. Seismic reinforcing shall not be required within the body of a masonry heater with a height that is equal to or less than 3.5 times its body width and where the masonry chimney serving the heater is not supported by the body of the heater. Where the masonry chimney shares a common wall with the facing of the masonry heater, the chimney portion of the structure shall be reinforced in accordance with Section 2113.

**2112.5 Masonry heater clearance.** Combustible materials shall not be placed within 36 inches (914 mm) or the distance of the allowed reduction method from the outside surface of a masonry heater in accordance with NFPA 211, Section 12.6, and the required space between the heater and combustible material shall be fully vented to permit the free flow of air around all heater surfaces.

### Exceptions:

1. Where the masonry heater wall thickness is not less than 8 inches (203 mm) of solid masonry and the wall thickness of the heat exchange channels is not less than 5 inches (127 mm) of solid masonry, combustible materials shall not be placed within 4 inches (102 mm) of the outside surface of a masonry heater. A clearance of not less than 8 inches (203 mm) shall be provided between the gas-tight capping slab of the heater and a combustible ceiling.
2. Masonry heaters listed and labeled in accordance with UL 1482 or EN 15250 and installed in accordance with the manufacturer's instructions.

## SECTION 2113 MASONRY CHIMNEYS

**2113.1 General.** The construction of masonry chimneys consisting of solid masonry units, hollow masonry units grouted solid, stone or concrete shall be in accordance with this section.

**2113.2 Footings and foundations.** Footings for masonry chimneys shall be constructed of concrete or solid masonry not less than 12 inches (305 mm) thick and shall extend not less than 6 inches (152 mm) beyond the face of the foundation or support wall on all sides. Footings shall be founded on natural undisturbed earth or engineered fill below frost depth. In areas not subjected to freezing, footings shall be not less than 12 inches (305 mm) below finished grade.

**2113.3 Seismic reinforcing.** Masonry chimneys shall be constructed, anchored, supported and reinforced as required in

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**2113.11.1 Residential-type appliances (general).** Flue lining systems shall comply with one of the following:

1. Clay flue lining complying with the requirements of ASTM C315.
2. Listed chimney lining systems complying with UL 1777.
3. Factory-built chimneys or chimney units listed for installation within masonry chimneys.
4. Other approved materials that will resist corrosion, erosion, softening or cracking from flue gases and condensate at temperatures up to 1,800°F (982°C).

**2113.11.1.1 Flue linings for specific appliances.** Flue linings other than those covered in Section 2113.11.1 intended for use with specific appliances shall comply with Sections 2113.11.1.2 through 2113.11.1.4, 2113.11.2 and 2113.11.3.

**2113.11.1.2 Gas appliances.** Flue lining systems for gas appliances shall be in accordance with the *California Mechanical Code*.

**2113.11.1.3 Pellet fuel-burning appliances.** Flue lining and vent systems for use in masonry chimneys with pellet fuel-burning appliances shall be limited to flue lining systems complying with Section 2113.11.1 and pellet vents listed for installation within masonry chimneys (see Section 2113.11.1.5 for marking).

**2113.11.1.4 Oil-fired appliances approved for use with L-vent.** Flue lining and vent systems for use in masonry chimneys with oil-fired appliances approved for use with Type L vent shall be limited to flue lining systems complying with Section 2113.11.1 and listed chimney liners complying with UL 641 (see Section 2113.11.1.5 for marking).

**2113.11.1.5 Notice of usage.** When a flue is relined with a material not complying with Section 2113.11.1, the chimney shall be plainly and permanently identified by a label attached to a wall, ceiling or other conspicuous location adjacent to where the connector enters the chimney. The label shall include the following message or equivalent language: "This chimney is for use only with (type or category of appliance) that burns (type of fuel). Do not connect other types of appliances."

**2113.11.2 Concrete and masonry chimneys for medium-heat appliances.** Concrete and masonry chimneys for medium-heat appliances shall comply with Sections 2113.11.2.1 through 2113.11.2.5.

**2113.11.2.1 Construction.** Chimneys for medium-heat appliances shall be constructed of solid masonry units or of concrete with walls not less than 8 inches (203 mm) thick, or with stone masonry not less than 12 inches (305 mm) thick.

**2113.11.2.2 Lining.** Concrete and masonry chimneys shall be lined with an approved medium-duty refractory brick not less than 4½ inches (114 mm) thick laid on the 4½-inch bed (114 mm) in an approved medium-

duty refractory mortar. The lining shall start 2 feet (610 mm) or more below the lowest chimney connector entrance. Chimneys terminating 25 feet (7620 mm) or less above a chimney connector entrance shall be lined to the top.

**2113.11.2.3 Multiple passageway.** Concrete and masonry chimneys containing more than one passageway shall have the liners separated by a minimum 4-inch-thick (102 mm) concrete or solid masonry wall.

**2113.11.2.4 Termination height.** Concrete and masonry chimneys for medium-heat appliances shall extend not less than 10 feet (3048 mm) higher than any portion of any building within 25 feet (7620 mm).

**2113.11.2.5 Clearance.** A minimum clearance of 4 inches (102 mm) shall be provided between the exterior surfaces of a concrete or masonry chimney for medium-heat appliances and combustible material.

**2113.11.3 Concrete and masonry chimneys for high-heat appliances.** Concrete and masonry chimneys for high-heat appliances shall comply with 2113.11.3.1 through 2113.11.3.4.

**2113.11.3.1 Construction.** Chimneys for high-heat appliances shall be constructed with double walls of solid masonry units or of concrete, each wall to be not less than 8 inches (203 mm) thick with a minimum airspace of 2 inches (51 mm) between the walls.

**2113.11.3.2 Lining.** The inside of the interior wall shall be lined with an approved high-duty refractory brick, not less than 4½ inches (114 mm) thick laid on the 4½-inch bed (114 mm) in an approved high-duty refractory mortar. The lining shall start at the base of the chimney and extend continuously to the top.

**2113.11.3.3 Termination height.** Concrete and masonry chimneys for high-heat appliances shall extend not less than 20 feet (6096 mm) higher than any portion of any building within 50 feet (15 240 mm).

**2113.11.3.4 Clearance.** Concrete and masonry chimneys for high-heat appliances shall have approved clearance from buildings and structures to prevent overheating combustible materials, permit inspection and maintenance operations on the chimney and prevent danger of burns to persons.

**2113.12 Clay flue lining (installation).** Clay flue liners shall be installed in accordance with ASTM C1283 and extend from a point not less than 8 inches (203 mm) below the lowest inlet or, in the case of fireplaces, from the top of the smoke chamber to a point above the enclosing walls. The lining shall be carried up vertically, with a maximum slope not greater than 30 degrees (0.52 rad) from the vertical.

Clay flue liners shall be laid in medium-duty nonwater-soluble refractory mortar conforming to ASTM C199 with tight mortar joints left smooth on the inside and installed to maintain an airspace or insulation not to exceed the thickness of the flue liner separating the flue liners from the interior face of the chimney masonry walls. Flue lining shall be sup-

## CHAPTER 22

# STEEL

**User notes:**

**About this chapter:** Chapter 22 provides the minimum requirements for the design and construction of structural steel (including composite construction), cold-formed steel, steel joists, steel cable structures and steel storage racks. This chapter specifies appropriate design and construction standards for these types of structures. It also provides a road map of the applicable technical requirements for steel structures. Chapter 22 requires that the design and use of steel structures and components be in accordance with the applicable specifications and standards of the American Institute of Steel Construction, the American Iron and Steel Institute, the Steel Joist Institute and the American Society of Civil Engineers.

**Code development reminder:** Code change proposals to this chapter will be considered by the IBC—Structural Code Development Committee during the 2022 (Group B) Code Development Cycle.

## SECTION 2201 GENERAL

**2201.1 Scope.** The provisions of this chapter govern the quality, design, fabrication and erection of steel construction.

**2201.1.1 Application.** [DSA-SS/CC, OSHPD] The scope of application of Chapter 22 is as follows:

1. *Office of Statewide Health Planning and Development (OSHPD).*

*Buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility buildings and acute psychiatric hospital buildings regulated by OSHPD. Applications listed in Sections 1.10.1, 1.10.2 and 1.10.5.*

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

**2201.1.2 Amendments in this chapter. [DSA-SS/CC, OSHPD]** DSA-SS, DSA-SS/CC, 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. *Office of Statewide Health Planning and Development:*

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

**[OSHPD 2]** - For applications listed in Section 1.10.2.

**[OSHPD 5]** - For applications listed in Section 1.10.5

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

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

**2201.1.3 Reference to other chapters. [DSA-SS/CC]**  
Where reference within this chapter is made to sections in Chapter 17, the provisions in Chapter 17A shall apply instead.

**2201.1.4 Amendments.** [DSA-SS/CC, OSHPD] See Section 2212 for additional requirements.

*[OSHPD 1R, 2 & 5] See Section 2213 for additional requirements.*

## SECTION 2202 IDENTIFICATION OF STEEL FOR STRUCTURAL PURPOSES

**2202.1 General.** Identification of structural steel elements shall be in accordance with AISC 360. Identification of cold-formed steel members shall be in accordance with AISI S100. Identification of cold-formed steel light-frame construction shall also comply with the requirements contained in AISI S240 or AISI S220, as applicable. Other steel furnished for structural load-carrying purposes shall be properly identified for conformity to the ordered grade in accordance with the specified ASTM standard or other specification and the provisions of this chapter. Where the steel grade is not readily identifiable from marking and test records, the steel shall be tested to verify conformity to such standards.

**SECTION 2203  
PROTECTION OF STEEL  
FOR STRUCTURAL PURPOSES**

**2203.1 General.** Painting of structural steel elements shall be in accordance with AISC 360. Painting of open-web steel joists and joist girders shall be in accordance with SJI 100 and SJI 200. Individual structural members and assembled panels of cold-formed steel construction shall be protected against corrosion in accordance with the requirements contained in AISI S100. Protection of cold-formed steel light-frame construction shall be in accordance with AISI S240 or AISI S220, as applicable.

## SECTION 2204 CONNECTIONS

**2204.1 Welding.** The details of design, workmanship and technique for welding, inspection of welding and qualification of welding operators shall conform to the requirements listed in Sections 2205, 2206, 2207, 2208, 2209, 2210 and 2211. Special inspection of welding shall be provided where required by Section 1705.

All welding, except when performed at the shop of an approved fabricator, shall be done by operators certified by the Department for the type of operation involved in accordance with the provisions of Section 1705.2.2.1.

Complete details of location, type, size and amount of all welds shall be clearly shown on the plans. Where symbols are

used on the plans, they shall be the “Standard Welding Symbols,” AWS A 2.4, of the American Welding Society (AWS). When it is necessary to use a special erection sequence of welding to minimize locked-up stresses or distortion, the Department may require the erection sequence of welding to be shown on the plans.

Welding procedures are qualified if they are in accordance with the AWS. Other welding procedures require special qualification approval by the Department. Each application for a special qualification shall be accompanied by a fee of \$50.00.

**2204.1.1 Restrained welded connections. [OSHPD 1R, 2 & 5]** *Welded structural steel connections having a medium or high level of restraint, as defined by AWS D1.1 Annex H, shall have a minimum pre-heat temperature of not less than 150°F (66°C). Welded structural steel connections with welds to flange, web, wall or plate having a high level of restraint shall maintain a post-heat temperature of 300°F (149°C) for a minimum of 1 hour after completion of welding.*

**2204.2 Bolting.** The design, installation and inspection of bolts shall be in accordance with the requirements of Sections 2205, 2206, 2207, 2210 and 2211. For special inspection of the installation of high-strength bolts, see Section 1705.2.

**2204.3 Anchor rods.** Anchor rods shall be set in accordance with the approved construction documents. The protrusion of the threaded ends through the connected material shall fully engage the threads of the nuts but shall not be greater than the length of the threads on the bolts.

**2204.4 Column base plate. [OSHPD 1R, 2 & 5]** *When shear and / or tensile forces are intended to be transferred between column base plates and anchor bolts, provisions shall be made in the design to eliminate the effects of oversized holes permitted in base plates by AISC 360 by use of shear lugs into the reinforced concrete foundation element and/or welded shear transfer plates or other means acceptable to the enforcement agency, when the oversized holes are larger than the anchor bolt by more than  $\frac{1}{8}$  inch (3.2 mm). When welded shear transfer plates and shear lugs or other means acceptable to the enforcement agency are not used, the anchor bolts shall be checked for the induced bending stresses in combination with the shear stresses.*

## SECTION 2205 STRUCTURAL STEEL

**2205.1 General.** The design, fabrication and erection of structural steel elements in buildings, structures and portions thereof shall be in accordance with AISC 360.

**Exceptions: [OSHPD 1R, 2 & 5]**

1. *For members designed on the basis of tension, the slenderness ratio ( $L/r$ ) shall not exceed 300, except for the design of hangers and bracing in accordance with NFPA 13 and for rod hangers in tension.*
2. *For members designed on the basis of compression, the slenderness ratio ( $KL/r$ ) shall not exceed 200, except for the design of hangers and bracing in accordance with NFPA 13.*

**2205.2 Seismic design.** Where required, the seismic design, fabrication and erection of buildings, structures and portions

thereof shall be in accordance with Section 2205.2.1 or 2205.2.2, as applicable.

**2205.2.1 Structural steel seismic force-resisting systems.** The design, detailing, fabrication and erection of structural steel seismic force-resisting systems shall be in accordance with the provisions of Section 2205.2.1.1 or 2205.2.1.2, as applicable.

**2205.2.1.1 Seismic Design Category B or C.** Structures assigned to Seismic Design Category B or C shall be of any construction permitted in Section 2205. Where a response modification coefficient,  $R$ , in accordance with ASCE 7, Table 12.2-1, is used for the design of structures assigned to Seismic Design Category B or C, the structures shall be designed and detailed in accordance with the requirements of AISC 341. Beam-to-column moment connections in special moment frames and intermediate moment frames shall be prequalified in accordance with AISC 341, Section K1, qualified by testing in accordance with AISC 341, Section K2, or shall be prequalified in accordance with AISC 358.

**Exception:** The response modification coefficient,  $R$ , designated for “Steel systems not specifically detailed for seismic resistance, excluding cantilever column systems” in ASCE 7, Table 12.2-1, shall be permitted for systems designed and detailed in accordance with AISC 360, and need not be designed and detailed in accordance with AISC 341.

**2205.2.1.2 Seismic Design Category D, E or F.** Structures assigned to Seismic Design Category D, E or F shall be designed and detailed in accordance with AISC 341, except as permitted in ASCE 7, Table 15.4-1. Beam-to-column moment connections in special moment frames and intermediate moment frames shall be prequalified in accordance with AISC 341, Section K1, qualified by testing in accordance with AISC 341, Section K2, or shall be prequalified in accordance with AISC 358. **[OSHPD 1R, 2 & 5]** *All structural steel seismic force-resisting systems in ASCE 7 Table 15.4-1 shall be designed in accordance with AISC 341.*

**2205.2.2 Structural steel elements.** The design, detailing, fabrication and erection of structural steel elements in seismic force-resisting systems other than those covered in Section 2205.2.1, including struts, collectors, chords and foundation elements, shall be in accordance with AISC 341 where either of the following applies:

1. The structure is assigned to Seismic Design Category D, E or F, except as permitted in ASCE 7, Table 15.4-1.
2. A response modification coefficient,  $R$ , greater than 3 in accordance with ASCE 7, Table 12.2-1, is used for the design of the structure assigned to Seismic Design Category B or C.

**2205.3 Modifications to AISC 341, Section F2.5, members, special concentrically braced frames (SCBF).** AISC 341, Section F2.5b is modified to add a new requirement as follows:

Section F2.5b(4) - The use of rectangular HSS is 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.

**2205.3.1 Section A4.** Replace Section A4.1 Item (c) as follows:

(c) Locations and dimensions of protected zones. The fabricator shall permanently mark protected zones of structural elements in the seismic force-resisting system in the building that are designated on the construction documents. If these markings are obscured during construction, such as after the application of fire protection, the owner's designated representative shall re-mark the protected zones as they are designated on the construction documents. Primers or paints used to mark protected zones on steel surfaces, which are to receive sprayed fire-resistance material, shall comply with California Building Code Section 704.13.3.2.

**2205.3.2 Section I2.** Replace Section I2.1 item (d) as follows:

(d) Decking attachments that penetrate the beam flange shall not be placed on beam flanges within the protected zone, except power-actuated fasteners up to 0.18 in. diameter are permitted, provided that the penetration is less than 85% of beam flange thickness.

#### **2205.4 Modifications to AISC 358. [OSHPD 1R, 2 & 5]**

**2205.4.1 Design Requirements, 2.1 Special and Intermediate Moment Frame Connection Types, Table 2-1 Prequalified Moment Connections modifications.** The prequalified bolted moment connections are not permitted in buildings.

##### **Exceptions:**

1. Erection bolts are permitted.
2. The approved bolted moment connection in accordance with AISC 358 Chapter 10 as permitted by the exception to Section 2206.2 and AISC 358-16 Supplement No. 1, Chapter 11.
3. Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light-steel-frame construction.

**2205.4.2 Moment Connection - Chapter 11.** The welded sideplate steel moment connection shall be permitted provided:

1. The beams shall consist of either rolled or built-up wide flange sections.
2. The biaxial dual-strong axis and column minor axis configurations of the moment connection shall be considered as an alternative system.
3. For SMF and IMF systems, U-shaped cover plates shall be used and the hinge-to-hinge span to beam depth,  $L_H/d$ , shall be greater than or equal to 5.
4. The width-to-thickness ratios for beam flanges shall not be less than 3.
5. The spacing for lateral bracing of wide flange beams,  $L_b$ , shall include the length of the side plate at beam ends.
6. The extension of the side plates beyond the face of the column shall be within the range of 0.77d to 1.0d.

7. The gap-to-side plate thickness ratio shall range from 2.1 to 2.3.

8. Demand critical fillet welds {2}, {5}, {5a} and {7} shall have Magnetic Particle Testing (MT) in accordance with AWS D1.1 for procedure, technique and acceptance. Inspect the beginning and end of these welds for a 6-inch length, plus any location along the length of the weld where a start and restart is visually noted for a distance of 6 inches on either side of the start/stop location.

**2205.4.3 Bolted Moment Connection - Chapter 11, Supplement No. 1.** The bolted sideplate steel moment connection in accordance with AISC 358-16 Supplement No. 1 shall be permitted provided:

1. A linear analysis procedure shall be used for design of the SMF and IMF systems using the bolted sideplate connection when permitted in accordance with ASCE 7. Nonlinear procedures will be considered as an alternative system.
2. The beams shall consist of either rolled or built-up wide flange sections. Columns shall consist of rolled or built-up wide flange sections or noncomposite built-up box or HSS with a minimum wall thickness of  $\frac{3}{4}$  inch (19 mm), or satisfy the requirements of width-to-thickness ratios of highly ductile members in AISC 341-16.
3. The biaxial dual-strong axis and column minor axis configurations of the moment connection shall be considered as an alternative system.
4. For SMF and IMF systems, on the sideplate standard or configuration A the U-shaped cover plates shall be used with the k dimension extension. The k dimension extension length is defined as beam depth  $d/6$ , rounded to the nearest  $\frac{1}{2}$  inch (12.7 mm).
5. The hinge-to-hinge span to beam depth,  $L_H/d$ , shall be greater than or equal to 4.5.
6. The width-to-thickness ratios for beam flanges shall not be less than 3.5.

**Exception:** For width-to-thickness ratios less than 3.5 the  $C_{pr}$  shall be calculated in accordance with that for welded sideplate connections but in no case shall the width-to-thickness ratio be less than 3.0.

7. The minimum bolt-to-bolt spacing shall not be less than 3 bolt diameters.
8. The extension of the side plates beyond the face of the column shall be within the range of 0.65d to 1.5d.
9. The gap-to-side plate thickness ratio shall range from 2.1 to 2.3.
10. Demand Critical fillet welds {2}, {5}, {5a} and {8} shall have Magnetic Particle Testing (MT) in accordance with AWS D1.1 for procedure, technique and acceptance. Inspect the beginning and end of these welds for a 6-inch (152 mm) length, plus any location along the length of the weld where a start and restart is visually noted for a distance of 6 inches (152 mm) on either side of the start/stop location.
11. The connection specific factor to account for peak connection strength,  $C_{pr}$ , shall be between 1.15 and

1.35. Calculations shall be submitted to OSHPD for review and approval.

12. For in-plane collectors transferring axial loads into the sideplate connection, coordination between sideplate and the registered design professional in responsible charge will be required to confirm the collector connection is sufficient to transfer the load into the moment frame system. This requirement shall be satisfied by designing the sideplate connections in the first bay of a multi-bay sideplate moment frame or an end bay to have a minimum connection capacity, including combined shear ( $V_u + V_g$ ) and moment ( $M_{pr}$ ) demands, of at least 1.2 times the  $M_{pr}$  at the plastic hinge location when the axial load, as determined by ASCE 7, Section 12.10.2.1 without  $\Omega_p$ , exceeds  $0.1 F_y A_g$  of the sideplate beam.
13. A complete frame analysis for gravity and design wind loading using LRFD load combinations in Section 1605.1 shall be performed including Demand/Capacity Ratios. Frame beam member nominal moment strengths ( $M_n$ ) used for gravity and design wind loading for the bolted sideplate connection using Class A or Class B faying surfaces shall be taken as  $0.80F_y Z$  for frame beams up to 300 plf and  $0.60F_y Z$  for frame beams greater than 300 plf.
14. For moment frame beams with maximum beam shear greater than 90 percent of the vertical bolt shear capacity, a secondary check is to be provided to confirm the vertical bolt shear capacities are sufficient.
15. Bolted sideplate connections used on heavy-shallow frame beams for beams greater than 200 plf and shallower than 24 inches (610 mm) in depth shall be considered as an alternative system.
16. Skewed beams shall utilize the link-beam fabrication method with CJP welded splices for skew angles. The skew angle shall be less than 15 degrees.
17. For two-sided bolted sideplate connections sharing the same side plates at the same height and depth across the column, the vertical offset in the beams shall not exceed 10 inches (254 mm).

## SECTION 2206 COMPOSITE STRUCTURAL STEEL AND CONCRETE STRUCTURES

**2206.1 General.** Systems of structural steel elements acting compositely with reinforced concrete shall be designed in accordance with AISC 360 and ACI 318, excluding ACI 318 Chapter 14.

**2206.2 Seismic design.** Where required, the seismic design, fabrication and erection of composite steel and concrete systems shall be in accordance with Section 2206.2.1.

**2206.2.1 Seismic requirements for composite structural steel and concrete construction.** Where a response modification coefficient,  $R$ , in accordance with ASCE 7, Table 12.2-1, is used for the design of systems of structural steel acting compositely with reinforced concrete, the structures shall be designed and detailed in accordance with the requirements of AISC 341.

**[OSHPD 1R, 2 & 5]** Seismic requirements for composite structural steel and concrete construction shall be considered as an alternative system.

### Exception:

Steel and concrete composite special moment frame with the approved moment connection in accordance with AISC 358 Chapter 10 shall be permitted provided:

- a. Beams are provided with Reduced Beam Sections (RBS);
- b. Web extension to beam web two-sided fillet welds are sized to develop expected strength of the beam web and shall not be less than a  $1/4$  inch fillet weld; and
- c. The built-up box column wall thickness shall not be less than 1.25 inches and the HSS column wall thickness shall not be less than  $1/2$  inch.

## SECTION 2207 STEEL JOISTS

**2207.1 General.** The design, manufacture and use of open-web steel joists and joist girders shall be in accordance with either SJI 100 or SJI 200, as applicable.

**2207.1.1 Seismic design.** Where required, the seismic design of buildings shall be in accordance with the additional provisions of Section 2205.2 or 2211.1.1.

**2207.2 Design.** The registered design professional shall indicate on the construction documents the steel joist and steel joist girder designations from the specifications listed in Section 2207.1; and shall indicate the requirements for joist and joist girder design, layout, end supports, anchorage, bridging design that differs from the SJI specifications listed in Section 2207.1, bridging termination connections and bearing connection design to resist uplift and lateral loads. These documents shall indicate special requirements as follows:

1. Special loads including:
  - 1.1. Concentrated loads.
  - 1.2. Nonuniform loads.
  - 1.3. Net uplift loads.
  - 1.4. Axial loads.
  - 1.5. End moments.
  - 1.6. Connection forces.
2. Special considerations including:
  - 2.1. Profiles for joist and joist girder configurations that differ from those defined by the SJI specifications listed in Section 2207.1.
  - 2.2. Oversized or other nonstandard web openings.
  - 2.3. Extended ends.
3. Live and total load deflection criteria for joists and joist girder configurations that differ from those defined by the SJI specifications listed in Section 2207.1.

**2207.3 Calculations.** The steel joist and joist girder manufacturer shall design the steel joists and steel joist girders in accordance with the SJI specifications listed in Section 2207.1 to support the load requirements of Section 2207.2. The registered design professional shall be permitted to require submission of the steel joist and joist girder calcula-

## CHAPTER 23

# WOOD

### User notes:

**About this chapter:** Chapter 23 provides minimum requirements for the design of buildings and structures that use wood and wood-based products. The chapter is organized around three design methodologies: allowable stress design (ASD), load and resistance factor design (LRFD) and conventional light-frame construction. In addition it allows the use of the American Wood Council Wood Frame Construction Manual for a limited range of structures. Included in the chapter are references to design and manufacturing standards for various wood and wood-based products; general construction requirements; design criteria for lateral force-resisting systems and specific requirements for the application of the three design methods.

**Code development reminder:** Code change proposals to this chapter will be considered by the IBC—Structural Code Development Committee during the 2022 (Group B) Code Development Cycle.

### SECTION 2301 GENERAL

**2301.1 Scope.** The provisions of this Chapter shall govern the materials, design, construction and quality of wood members and their fasteners.

Hillside buildings (buildings constructed upon slopes steeper than one unit vertical in three units horizontal [33.3-percent slope]) shall comply with Section 1613.9 (seismic design provisions for hillside buildings) and this Chapter.

**[HCD 1]** For limited-density owner-built rural dwellings, owner-produced or used materials and appliances may be utilized unless found not to be of sufficient strength or durability to perform the intended function; owner-produced or used lumber, or shakes and shingles may be utilized unless found to contain dry rot, excessive splitting or other defects obviously rendering the material unfit in strength or durability for the intended purpose.

**2301.1.1 Application. [DSA-SS, DSA-SS/CC & OSHPD 1, 1R, 2, 4 & 5]** The scope of application of Chapter 23 is as follows:

1. Structures regulated by the Division of the State Architect-Structural Safety, which include those applications listed in Section 1.9.2.1 (DSA-SS) and 1.9.2.2 (DSA-SS/CC). These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings.
2. Applications listed in Section 1.10, 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:** For applications listed in Section 1.10.3 (Licensed Clinics), the provisions of this chapter without OSHPD amendments identified in accordance with Section 2301.1.2 shall apply.

**2301.1.2 Amendments in this chapter. [DSA-SS, DSA-SS/CC & OSHPD 1, 1R, 2, 4 & 5]** DSA-SS, DSA-SS/CC 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.
  - [DSA-SS/CC]** - For applications listed in Section 1.9.2.2.
2. Office of Statewide Health Planning and Development:
  - [OSHPD 1]** - For applications listed in Section 1.10.1.
  - [OSHPD 1R]** - For applications listed in Section 1.10.1.
  - [OSHPD 2]** - For applications listed in Section 1.10.2.
  - [OSHPD 4]** - For applications listed in Section 1.10.4.
  - [OSHPD 5]** - For applications listed in Section 1.10.5.

#### 2301.1.3 Reference to other chapters.

**2301.1.3.1 [DSA-SS and OSHPD 1 & 4]** Where reference within this chapter is made to sections in Chapters 16, 17, 18, 19, 21 and 22, the provisions in Chapters 16A, 17A, 18A, 19A, 21A and 22A, respectively shall apply instead.

**2301.1.3.2 [DSA-SS/CC]** Where reference within this chapter is made to sections in Chapters 17 and 18, the provisions in Chapters 17A and 18A respectively shall apply instead.

**2301.1.4 Prohibition. [DSA-SS & DSA-SS/CC & OSHPD 1, 1R, 2, 4 & 5]** The following design methods, systems and materials are not permitted by DSA and OSHPD:

1. Straight-sheathed horizontal lumber diaphragms.
2. Gypsum-based sheathing shear walls and portland cement plaster shear walls.
3. Shear wall foundation anchor bolt washers in accordance with exception to AWC SDPWS Section 4.3.6.4.3.

4. *Wood structural panel shear walls and diaphragms using staples as fasteners.*
5. *Unblocked shear walls.*
6. *Any wood structural panel sheathing used for diaphragms and shear walls that are part of the seismic force-resisting system, not applied directly to framing members.*
7. *Single and double diagonally sheathed lumber walls used to resist seismic forces.*
8. *Log structures in accordance with ICC 400.*
9. *Cross-laminated timber used as part of the seismic force-resisting system, unless approved as an alternative system in accordance with Section 104.11.*

**2301.2 Nominal sizes.** For the purposes of this chapter, where dimensions of lumber are specified, they shall be deemed to be nominal dimensions unless specifically designated as actual dimensions (see Section 2304.2).

## SECTION 2302 DESIGN REQUIREMENTS

**2302.1 General.** The design of structural elements or systems, constructed partially or wholly of wood or wood-based products, shall be in accordance with one of the following methods:

1. Allowable stress design in accordance with Sections 2304, 2305 and 2306.
2. Load and resistance factor design in accordance with Sections 2304, 2305 and 2307.
3. Conventional light-frame construction in accordance with Sections 2304 and 2308.
4. AWC WFCM in accordance with Section 2309.
5. The design and construction of log structures in accordance with the provisions of ICC 400.

## SECTION 2303 MINIMUM STANDARDS AND QUALITY

**2303.1 General.** Structural sawn lumber; end-jointed lumber; prefabricated wood I-joists; structural glued-laminated timber; wood structural panels; fiberboard sheathing (where used structurally); hardboard siding (where used structurally); particleboard; preservative-treated wood; structural log members; structural composite lumber; round timber poles and piles; fire-retardant-treated wood; hardwood plywood; wood trusses; joist hangers; nails; and staples shall conform to the applicable provisions of this section.

**2303.1.1 Sawn lumber.** Sawn lumber used for load-supporting purposes, including end-jointed or edge-glued lumber, machine stress-rated or machine-evaluated lumber, shall be identified by the grade mark of a lumber grading or inspection agency that has been approved by an accreditation body that complies with DOC PS 20 or equivalent. Grading practices and identification shall comply with rules published by an agency approved in accordance with the procedures of DOC PS 20 or equivalent procedures.

**2303.1.1.1 Certificate of inspection.** In lieu of a grade mark on the material, a certificate of inspection as to

species and grade issued by a lumber grading or inspection agency meeting the requirements of this section is permitted to be accepted for precut, remanufactured or rough-sawn lumber and for sizes larger than 3 inches (76 mm) nominal thickness.

**2303.1.1.2 End-jointed lumber.** Approved end-jointed lumber is permitted to be used interchangeably with solid-sawn members of the same species and grade. End-jointed lumber used in an assembly required to have a fire-resistance rating shall have the designation “Heat Resistant Adhesive” or “HRA” included in its grade mark.

**2303.1.2 Prefabricated wood I-joists.** Structural capacities and design provisions for prefabricated wood I-joists shall be established and monitored in accordance with ASTM D5055.

**2303.1.3 Structural glued-laminated timber.** Glued-laminated timbers shall be manufactured and identified as required in ANSI/APA 190.1 and ASTM D3737.

**2303.1.3.1 Additional requirements.** [DSA-SS, DSA-SS/CC and OSHPD 1, 1R, 2, 4 & 5] The construction documents shall indicate the following:

1. *Dry or wet service conditions.*
2. *Laminating combinations and stress requirements.*
3. *Species group.*
4. *Preservative material and retention, when preservative treatment is required.*
5. *Provisions for protection during shipping and field handling, such as sealing and wrapping in accordance with AITC 111.*

*When mechanical reinforcement such as radial tension reinforcement is required, such reinforcement shall comply with AITC 404 and shall be detailed accordingly in the construction documents. Construction documents shall specify that the moisture content of laminations at the time of manufacture shall not exceed 12 percent for dry conditions of use.*

*The design of fasteners and connections shall comply with AITC 117, Section I, Item 6 (Connection Design), and NDS Appendix E.*

**2303.1.4 Structural glued cross-laminated timber.** Cross-laminated timbers shall be manufactured and identified in accordance with ANSI/APA PRG 320.

**2303.1.4.1 Additional requirements.** [DSA-SS & DSA-SS/CC & OSHPD 1, 1R, 2, 4 & 5] Requirements in Section 2303.1.3.1 shall apply to glued cross-laminated timber.

**2303.1.5 Wood structural panels.** Wood structural panels, where used structurally (including those used for siding, roof and wall sheathing, subflooring, diaphragms and built-up members), shall conform to the requirements for their type in DOC PS 1, DOC PS 2 or ANSI/APA PRP 210. Each panel or member shall be identified for grade, bond classification, and Performance Category by the trademarks of an approved testing and grading agency. The Performance Category value shall be used as the “nominal panel thickness” or “panel thickness” whenever

separated by not fewer than two intervening courses. In the end bays, each piece shall bear on one support or more. Where an end joint occurs in an end bay, the next piece in the same course shall continue over the first inner support for not less than 24 inches (610 mm). The details of the controlled random pattern shall be as specified for each decking material in Section 2304.9.3.3, 2304.9.4.3 or 2304.9.5.3.

Decking that cantilevers beyond a support for a horizontal distance greater than 18 inches (457 mm), 24 inches (610 mm) or 36 inches (914 mm) for 2-inch (51 mm), 3-inch (76 mm) and 4-inch (102 mm) nominal thickness decking, respectively, shall comply with the following:

1. The maximum cantilevered length shall be 30 percent of the length of the first adjacent interior span.
2. A structural fascia shall be fastened to each decking piece to maintain a continuous, straight line.
3. End joints shall not be in the decking between the cantilevered end of the decking and the centerline of the first adjacent interior span.

**2304.9.3 Mechanically laminated decking.** Mechanically laminated decking shall comply with Sections 2304.9.3.1 through 2304.9.3.3.

**2304.9.3.1 General.** Mechanically laminated decking consists of square-edged dimension lumber laminations set on edge and nailed to the adjacent pieces and to the supports.

**2304.9.3.2 Nailing.** The length of nails connecting laminations shall be not less than two and one-half times the net thickness of each lamination. Where decking supports are 48 inches (1219 mm) on center or less, side nails shall be installed not more than 30 inches (762 mm) on center alternating between top and bottom edges, and staggered one-third of the spacing in adjacent laminations. Where supports are spaced more than 48 inches (1219 mm) on center, side nails shall be installed not more than 18 inches (457 mm) on center alternating between top and bottom edges and staggered one-third of the spacing in adjacent laminations. For mechanically laminated decking constructed with laminations of 2-inch (51 mm) nominal thickness, nailing in accordance with Table 2304.9.3.2 shall be permitted. Two side nails shall be installed at each end of butt-jointed pieces.

Laminations shall be toenailed to supports with 20d or larger common nails. Where the supports are 48 inches (1219 mm) on center or less, alternate laminations shall be toenailed to alternate supports; where supports are spaced more than 48 inches (1219 mm) on center, alternate laminations shall be toenailed to every support. For mechanically laminated decking constructed with laminations of 2-inch (51 mm) nominal thickness, toenailing in accordance with Table 2304.9.3.2 shall be permitted.

**2304.9.3.3 Controlled random pattern.** There shall be a minimum distance of 24 inches (610 mm) between end joints in adjacent courses. The pieces in the first and second courses shall bear on not fewer than two supports with end joints in these two courses occurring on alter-

**TABLE 2304.9.3.2**  
**FASTENING SCHEDULE FOR MECHANICALLY LAMINATED DECKING USING LAMINATIONS OF 2-INCH NOMINAL THICKNESS**

MINIMUM NAIL SIZE (Length x Diameter) (inches)	MAXIMUM SPACING BETWEEN FACE NAILS <sup>a, b</sup> (inches)		NUMBER OF TOENAILS INTO SUPPORTS <sup>c</sup>
	Decking Supports ≤ 48 inches o.c.	Decking Supports > 48 inches o.c.	
4 × 0.192	30	18	1
4 × 0.162	24	14	2
4 × 0.148	22	13	2
3½ × 0.162	20	12	2
3½ × 0.148	19	11	2
3½ × 0.135	17	10	2
3 × 0.148	11	7	2
3 × 0.128	9	5	2
2¾ × 0.148	10	6	2
2¾ × 0.131	9	6	3
2¾ × 0.120	8	5	3

For SI: 1 inch = 25.4 mm

a. Nails shall be driven perpendicular to the lamination face, alternating between top and bottom edges.

b. Where nails penetrate through two laminations and into the third, they shall be staggered one-third of the spacing in adjacent laminations. Otherwise, nails shall be staggered one-half of the spacing in adjacent laminations.

c. Where supports are 48 inches on center or less, alternate laminations shall be toenailed to alternate supports; where supports are spaced more than 48 inches on center, alternate laminations shall be toenailed to every support.

nate supports. Not more than seven intervening courses shall be permitted before this pattern is repeated.

**2304.9.4 Two-inch sawn tongue-and-groove decking.** Two-inch (51 mm) sawn tongue-and-groove decking shall comply with Sections 2304.9.4.1 through 2304.9.4.3.

**2304.9.4.1 General.** Two-inch (51 mm) decking shall have a maximum moisture content of 15 percent. Decking shall be machined with a single tongue-and-groove pattern. Each decking piece shall be nailed to each support.

**2304.9.4.2 Nailing.** Each piece of decking shall be toenailed at each support with one 16d common nail through the tongue and face-nailed with one 16d common nail.

**2304.9.4.3 Controlled random pattern.** There shall be a minimum distance of 24 inches (610 mm) between end joints in adjacent courses. The pieces in the first and second courses shall bear on not fewer than two supports with end joints in these two courses occurring on alternate supports. Not more than seven intervening courses shall be permitted before this pattern is repeated.

**2304.9.5 Three- and four-inch sawn tongue-and-groove decking.** Three- and four-inch (76 mm and 102 mm) sawn tongue-and-groove decking shall comply with Sections 2304.9.5.1 through 2304.9.5.3.

**2304.9.5.1 General.** Three-inch (76 mm) and four-inch (102 mm) decking shall have a maximum moisture content of 19 percent. Decking shall be machined with a double tongue-and-groove pattern. Decking pieces shall be interconnected and nailed to the supports.

**2304.9.5.2 Nailing.** Each piece shall be toenailed at each support with one 40d common nail and face-nailed with one 60d common nail. Courses shall be spiked to each other with 8-inch (203 mm) spikes at maximum intervals of 30 inches (762 mm) through predrilled edge holes penetrating to a depth of approximately 4 inches (102 mm). One spike shall be installed at a distance not exceeding 10 inches (254 mm) from the end of each piece.

**2304.9.5.3 Controlled random pattern.** There shall be a minimum distance of 48 inches (1219 mm) between end joints in adjacent courses. Pieces not bearing on a support are permitted to be located in interior bays provided that the adjacent pieces in the same course continue over the support for not less than 24 inches (610 mm). This condition shall not occur more than once in every six courses in each interior bay.

**2304.10 Connectors and fasteners.** Connectors and fasteners shall comply with the applicable provisions of Sections 2304.10.1 through 2304.10.8.

**2304.10.1 Connection fire-resistance rating.** Fire-resistance ratings for connections in Type IV-A, IV-B, or IV-C construction shall be determined by one of the following:

1. Testing in accordance with Section 703.2 where the connection is part of the fire resistance test.

2. Engineering analysis that demonstrates that the temperature rise at any portion of the connection is limited to an average temperature rise of 250°F (139°C), and a maximum temperature rise of 325°F (181°C), for a time corresponding to the required fire-resistance rating of the structural element being connected. For the purposes of this analysis, the connection includes connectors, fasteners, and portions of wood members included in the structural design of the connection.

**2304.10.2 Fastener requirements.** Connections for wood members shall be designed in accordance with the appropriate methodology in Section 2302.1. The number and size of fasteners connecting wood members shall not be less than that set forth in Table 2304.10.2. Staple fasteners in Table 2304.10.2 shall not be used to resist or transfer seismic forces in structures assigned to Seismic Design Category D, E or F.

**Exception:** Staples may be used to resist or transfer seismic forces when the allowable shear values are substantiated by cyclic testing and approved by the Superintendent of Building.

**2304.10.2.1 Additional requirements.** *[DSA-SS and OSHPD 1, 1R, 2B, 4 & 5] Fasteners used for the attachment of exterior wall coverings shall be of hot-dipped zinc-coated galvanized steel, mechanically deposited zinc-coated steel, stainless steel, silicon bronze or copper. The coating weights for hot-dipped zinc-coated fasteners shall be in accordance with ASTM A153. The coating weights for mechanically deposited zinc coated fasteners shall be in accordance with ASTM B695, Class 55 minimum.*

**2304.10.3 Sheathing fasteners.** Sheathing nails or other approved sheathing connectors shall be driven so that their head or crown is flush with the surface of the sheathing.

**2304.10.4 Joist hangers and framing anchors.** Connections depending on joist hangers or framing anchors, ties and other mechanical fastenings not otherwise covered are permitted where approved. The vertical load-bearing capacity, torsional moment capacity and deflection characteristics of joist hangers shall be determined in accordance with ASTM D7147.

**2304.10.5 Other fasteners.** Clips, staples, glues and other approved methods of fastening are permitted where approved.

**2304.10.6 Fasteners and connectors in contact with preservative-treated and fire-retardant-treated wood.** Fasteners, including nuts and washers, and connectors in contact with preservative-treated and fire-retardant-treated wood shall be in accordance with Sections 2304.10.6.1 through 2304.10.6.4. The coating weights for zinc-coated fasteners shall be in accordance with ASTM A153. Stainless steel driven fasteners shall be in accordance with the material requirements of ASTM F1667.

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considered in the design. Corbelling of masonry walls under the floor shall be permitted to be used.

**2304.11.3.2 Sawn or glued-laminated plank floors.** Sawn or glued-laminated plank floors shall be one of the following:

1. Sawn or glued-laminated planks, splined or tongue-and-groove, of not less than 3 inches (76 mm) nominal in thickness covered with 1-inch (25 mm) nominal dimension tongue-and-groove flooring, laid crosswise or diagonally,  $1\frac{5}{32}$ -inch (12 mm) wood structural panel or  $\frac{1}{2}$ -inch (12.7 mm) particleboard.
2. Planks not less than 4 inches (102 mm) nominal in width set on edge close together and well spiked and covered with 1-inch (25 mm) nominal dimension flooring or  $1\frac{5}{32}$ -inch (12 mm) wood structural panel or  $\frac{1}{2}$ -inch (12.7 mm) particleboard.

The lumber shall be laid so that continuous lines of joints will occur only at points of support. Floors shall not extend closer than  $\frac{1}{2}$  inch (12.7 mm) to walls. Such  $\frac{1}{2}$ -inch (12.7 mm) space shall be covered by a molding fastened to the wall and so arranged that it will not obstruct the swelling or shrinkage movements of the floor. Corbelling of masonry walls under the floor shall be permitted to be used in place of molding.

**2304.11.4 Roof decks.** Roofs shall be without concealed spaces or with concealed spaces complying with Section 602.4.4.3. Roof decks shall be constructed in accordance with Section 2304.11.4.1 or 2304.11.4.2. Other types of decking shall be an alternative that provides equivalent fire resistance and structural properties. Where supported by a wall, roof decks shall be anchored to walls to resist forces determined in accordance with Chapter 16. Such anchors shall consist of steel bolts, lags, screws or approved hardware of sufficient strength to resist prescribed forces.

**2304.11.4.1 Cross-laminated timber roofs.** Cross-laminated timber roofs shall be not less than 3 inches (76 mm) nominal in thickness and shall be continuous from support to support and mechanically fastened to one another.

**2304.11.4.2 Sawn, wood structural panel, or glued-laminated plank roofs.** Sawn, wood structural panel, or glued-laminated plank roofs shall be one of the following:

1. Sawn or glued laminated, splined or tongue-and-groove plank, not less than 2 inches (51 mm) nominal in thickness.
2.  $1\frac{1}{8}$ -inch-thick (32 mm) wood structural panel (exterior glue).
3. Planks not less than 3 inches (76 mm) nominal in width, set on edge close together and laid as required for floors.

**2304.12 Protection against decay and termites.** Wood shall be protected from decay and termites in accordance with the applicable provisions of Sections 2304.12.1 through 2304.12.4.

**2304.12.1 Locations requiring waterborne preservatives or naturally durable wood.** Wood used above

ground in the locations specified in Sections 2304.12.1.1 through 2304.12.1.5 shall be naturally durable wood or preservative-treated wood using waterborne preservatives, in accordance with AWPA U1 for above-ground use.

**2304.12.1.1 Joists, girders and subfloor.** Wood joists or wood structural floors that are closer than 18 inches (457 mm) or wood girders that are closer than 12 inches (305 mm) to the exposed ground in crawl spaces or unexcavated areas located within the perimeter of the building foundation shall be of naturally durable or preservative-treated wood.

**2304.12.1.1.1 [SPCB]** *There shall be a clearance of at least 18 inches (457 mm) between the underside of wood floor joists and the finished surface of the ground, and at least 12 inches (305 mm) between the underside of any other wood horizontal framing member and the finished surface of the ground. The ground underneath floor joists shall be leveled or smoothed off so as to maintain a reasonably even surface.*

**Exception:** *For purposes of structural pest control inspection, a minimum of 12 inches (305 mm) of clearance under-floor joists shall be considered adequate except that such clearance shall not be necessary where the subarea soil is of such a nature as to prevent excavation or where excavation would create a hazard from shifting soil or other causes.*

**2304.12.1.2 Wood supported by exterior foundation walls.** Wood framing members, including wood sheathing, that are in contact with exterior foundation walls and are less than 8 inches (203 mm) from exposed earth shall be of naturally durable or preservative-treated wood.

**Exception:** *[DSA-SS and OSHPD 1, 1R, 2, 4 & 5] At exterior walls where the earth is paved with an asphalt or concrete slab at least 18 inches (457 mm) wide and draining away from the building, the bottom of sills are permitted to be 6 inches (152 mm) above the top of such slab. Other equivalent means of termite and decay protection may be accepted by the enforcement agency.*

**2304.12.1.3 Exterior walls below grade.** Wood framing members and furring strips in direct contact with the interior of exterior masonry or concrete walls below grade shall be of naturally durable or preservative-treated wood.

**2304.12.1.4 Sleepers and sills.** Sleepers and sills on a concrete or masonry slab that is in direct contact with earth shall be of naturally durable or preservative-treated wood.

**2304.12.1.4.1 Additional requirements.** *[DSA-SS and OSHPD 1, 1R, 2, 4 & 5] Stud walls or partitions at shower or toilet rooms with more than two plumbing fixtures, excluding floor drains, and stud walls adjacent to unroofed paved areas shall rest on a concrete curb extending at least 6 inches (152 mm) above finished floor and pavement level.*

**2304.12.1.5 Wood siding.** Clearance between wood siding and earth on the exterior of a building shall be not less than 6 inches (152 mm) or less than 2 inches (51 mm)

vertical from concrete steps, porch slabs, patio slabs and similar horizontal surfaces exposed to the weather except where siding, sheathing and wall framing are of naturally durable or preservative-treated wood.

**2304.12.2 Other locations.** Wood used in the locations specified in Sections 2304.12.2.1 through 2304.12.2.8 shall be naturally durable wood or preservative-treated wood in accordance with AWP A U1. Preservative-treated wood used in interior locations shall be protected with two coats of urethane, shellac, latex epoxy or varnish unless waterborne preservatives are used. Prior to application of the protective finish, the wood shall be dried in accordance with the manufacturer's recommendations.

**2304.12.2.1 Girder ends.** The ends of wood girders entering exterior masonry or concrete walls shall be provided with a 1/2-inch (12.7 mm) airspace on top, sides and end, unless naturally durable or preservative-treated wood is used.

**2304.12.2.2 Posts or columns.** Posts or columns supporting permanent structures and supported by a concrete or masonry slab or footing that is in direct contact with the earth shall be of naturally durable or preservative-treated wood.

**Exception:** Posts or columns that meet all of the following:

1. Are not exposed to the weather, or are protected by a roof, eave, overhang, or other covering if exposed to the weather.
2. Are supported by concrete piers or metal pedestals projected not less than 1 inch (25 mm) above the slab or deck and are separated from the concrete pier by an impervious moisture barrier.
3. Are located not less than 8 inches (203 mm) above exposed earth.

**2304.12.2.3 Supporting member for permanent appurtenances.** Naturally durable or preservative-treated wood shall be utilized for those portions of wood members that form the structural supports of buildings, balconies, porches or similar permanent building appurtenances where such members are exposed to the weather without adequate protection from a roof, eave, overhang or other covering to prevent moisture or water accumulation on the surface or at joints between members.

**Exception:** Sawn lumber in buildings located in a geographical region where experience has demonstrated that climatic conditions preclude the need to use durable materials where the structure is exposed to the weather.

**2304.12.2.4 Supporting members for permeable floors and roofs.** Wood structural members that support moisture-permeable floors or roofs that are exposed to the weather, such as concrete or masonry slabs, shall be of naturally durable or preservative-treated wood unless separated from such floors or roofs by an impervious moisture barrier. The impervious moisture barrier system protecting the structure supporting floors shall

provide positive drainage of water that infiltrates the moisture-permeable floor topping.

**2304.12.2.5 Ventilation beneath balcony or elevated walking surfaces.** Enclosed framing in exterior balconies and elevated walking surfaces that have weather-exposed surfaces shall be provided with openings that provide a net free cross-ventilation area not less than 1/150 of the area of each separate space.

**2304.12.2.6 Wood in contact with the ground or fresh water.** Wood used in contact with exposed earth shall be naturally durable for both decay and termite resistance or preservative treated in accordance with AWP A U1 for soil or fresh water use.

**Exception:** Untreated wood is permitted where such wood is continuously and entirely below the ground-water level or submerged in fresh water.

**2304.12.2.6.1 Posts or columns.** Posts and columns that are supporting permanent structures and embedded in concrete that is exposed to the weather or in direct contact with the earth shall be of preservative-treated wood.

**2304.12.2.7 Termite protection.** In geographical areas where hazard of termite damage is known to be very heavy, wood floor framing in the locations specified in Section 2304.12.1.1 and exposed framing of exterior decks or balconies shall be of naturally durable species (termite resistant) or preservative treated in accordance with AWP A U1 for the species, product preservative and end use or provided with approved methods of termite protection.

**2304.12.2.8 Wood used in retaining walls and cribs.** Wood installed in retaining or crib walls shall be preservative treated in accordance with AWP A U1 (Commodity Specifications A or F) for soil and fresh water use. Wood shall not be used in retaining walls or cribs for structures assigned to Seismic Design Category D, E or F.

**2304.12.3 Attic ventilation.** For attic ventilation, see Section 1202.2.2.

**2304.12.4 Under-floor ventilation (crawl space).** For under-floor ventilation (crawl space), see Section 1202.4.

**2304.12.8 Separate wood framing. [SPCB]** *Correct the conditions in frame and stucco walls and similar appurtenant construction so that the wood framing is separate from the main structure by a complete concrete or masonry plug with no voids that will allow infestations to enter the structure from the wall. If there is no plug, the foundation shall be 2 inches (51 mm) or more above the grade levels and at least as high as the adjoining slabs or 4-inch (102 mm) concrete barrier seat off installed.*

**2304.12.9 Earth fills. [SPCB]** *Separate the earth fills such as under porches or paving from all woodwork by concrete, masonry, good quality cement plaster or other material approved by local building codes. Chemical treatment of earth fills is considered adequate if the foundation adjoining the fill meets standards of the current building codes.*

**2304.13 Long-term loading.** Wood members supporting concrete, masonry or similar materials shall be checked for

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the effects of long-term loading using the provisions of the ANSI/AWC NDS. The total deflection, including the effects of long-term loading, shall be limited in accordance with Section 1604.3.1 for these supported materials.

**Exception:** Horizontal wood members supporting masonry or concrete nonstructural floor or roof surfacing not more than 4 inches (102 mm) thick need not be checked for long-term loading.

## SECTION 2305 GENERAL DESIGN REQUIREMENTS FOR LATERAL FORCE-RESISTING SYSTEMS

**2305.1 General.** Structures using wood-frame shear walls or wood-frame diaphragms to resist wind, seismic or other lateral loads shall be designed and constructed in accordance with AWC SDPWS and the applicable provisions of Sections 2305, 2306 and 2307.

**2305.1.1 Openings in shear panels.** Openings in shear panels that materially affect their strength shall be detailed on the plans and shall have their edges adequately reinforced to transfer all shearing stresses.

**2305.1.2 Additional requirements.** [DSA-SS, DSA-SS/CC and OSHPD 1, 1R, 2, 4 & 5] See Section 2301.1.4 for modifications to AWC SDPWS.

**2305.2 Diaphragm deflection.** The deflection of wood-frame diaphragms shall be determined in accordance with AWC SDPWS. The deflection ( $\Delta_{dia}$ ) of a blocked wood structural panel diaphragm uniformly fastened throughout with staples is permitted to be calculated in accordance with Equation 23-1. If not uniformly fastened, the constant 0.188 (For SI: 1/1627) in the third term shall be modified by an approved method.

$$\Delta_{dia} = 5vL^3/8EAW + vL/4Gt + 0.188Le_n + \Sigma(x\Delta_c)/2W \quad \text{(Equation 23-1)}$$

For SI:  $\Delta_{dia} = 0.052vL^3/EAW + vL/4Gt + Le_n/1627 + \Sigma(x\Delta_c)/2W$

where:

- $A$  = Area of chord cross section, in square inches (mm<sup>2</sup>).
- $E$  = Modulus of elasticity of diaphragm chords, in pounds per square inch (N/mm<sup>2</sup>).
- $e_n$  = Staple slip, in inches (mm) [see Table 2305.2(1)].
- $Gt$  = Panel rigidity through the thickness, in pounds per inch (N/mm) of panel width or depth [see Table 2305.2(2)].
- $L$  = Diaphragm length (dimension perpendicular to the direction of the applied load), in feet (mm).
- $v$  = Induced unit shear in pounds per linear foot (plf) (N/mm).
- $W$  = Diaphragm width [in the direction of applied force, in feet (mm)].
- $x$  = Distance from chord splice to nearest support, in feet (mm).
- $\Delta_c$  = Diaphragm chord splice slip at the induced unit shear, in inches (mm).
- $\Delta_{dia}$  = Maximum mid-span diaphragm deflection determined by elastic analysis, in inches (mm).

**TABLE 2305.2(1)**  
 **$e_n$  VALUES (inches) FOR USE IN CALCULATING DIAPHRAGM**  
**AND SHEAR WALL DEFLECTION DUE TO FASTENER SLIP**  
**(Structural I)<sup>a, c</sup>**

LOAD PER FASTENER <sup>b</sup> (pounds)	FASTENER DESIGNATIONS
	14-Ga staple × 2 inches long
60	0.011
80	0.018
100	0.028
120	0.04
140	0.053
160	0.068

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound = 4.448 N.

- a. Increase  $e_n$  values 20 percent for plywood grades other than Structural I.
- b. Load per fastener = maximum shear per foot divided by the number of fasteners per foot at interior panel edges.
- c. Decrease  $e_n$  values 50 percent for seasoned lumber (moisture content < 19 percent).

**2305.3 Shear wall deflection.** The deflection of wood-frame shear walls shall be determined in accordance with AWC SDPWS. The deflection ( $\Delta_{sw}$ ) of a blocked wood structural panel shear wall uniformly fastened throughout with staples is permitted to be calculated in accordance with Equation 23-2.

$$\Delta_{sw} = 8vh^3/EAb + vh/4Gt + 0.75he_n + d_a h/b \quad \text{(Equation 23-2)}$$

For SI:  $\Delta_{sw} = vh^3/3EAb + vh/Gt + \frac{he_n}{407.6} + d_a h/b$

where:

- $A$  = Area of end-post cross section in square inches (mm<sup>2</sup>).
- $b$  = Shear wall length, in feet (mm).
- $d_a$  = Total vertical elongation of wall anchorage system (such as fastener slip, device elongation, rod elongation) in inches (mm), at the induced unit shear in the shear wall ( $v$ ).
- $E$  = Modulus of elasticity of end posts, in pounds per square inch (N/mm<sup>2</sup>).
- $e_n$  = Staple slip, in inches (mm) [see Table 2305.2(1)].
- $Gt$  = Panel rigidity through the thickness, in pounds per inch (N/mm) of panel width or depth [see Table 2305.2(2)].
- $h$  = Shear wall height, in feet (mm).
- $v$  = Induced unit shear, in pounds per linear foot (N/mm).
- $\Delta_{sw}$  = Maximum shear wall deflection determined by elastic analysis, in inches (mm).

**2305.4 Quality of nails.** In Seismic Design Category D, E or F, mechanically driven nails used in wood structural panel shear walls shall meet the same dimensions as that required for hand-driven nails, including diameter, minimum length and minimum head diameter. Clipped head or box nails are not permitted in new construction. The allowable design value for clipped head nails in existing construction may be taken at no more than the nail-head-area ratio of that of the same size hand-driven nails.

**TABLE 2305.2(2)**  
**VALUES OF  $G_t$  FOR USE IN CALCULATING DEFLECTION OF WOOD STRUCTURAL PANEL SHEAR WALLS AND DIAPHRAGMS**

PANEL TYPE	SPAN RATING	VALUES OF $G_t$ (lb/in. panel depth or width)							
		Structural Sheathing				Structural I			
		Plywood			OSB	Plywood			OSB
		3-ply	4-ply	5-ply <sup>a</sup>		3-ply	4-ply	5-ply <sup>a</sup>	
Sheathing	24/0	25,000	32,500	37,500	77,500	32,500	42,500	41,500	77,500
	24/16	27,000	35,000	40,500	83,500	35,000	45,500	44,500	83,500
	32/16	27,000	35,000	40,500	83,500	35,000	45,500	44,500	83,500
	40/20	28,500	37,000	43,000	88,500	37,000	48,000	47,500	88,500
	48/24	31,000	40,500	46,500	96,000	40,500	52,500	51,000	96,000
Single Floor	16 o.c.	27,000	35,000	40,500	83,500	35,000	45,500	44,500	83,500
	20 o.c.	28,000	36,500	42,000	87,000	36,500	47,500	46,000	87,000
	24 o.c.	30,000	39,000	45,000	93,000	39,000	50,500	49,500	93,000
	32 o.c.	36,000	47,000	54,000	110,000	47,000	61,000	59,500	110,000
	48 o.c.	50,500	65,500	76,000	155,000	65,500	85,000	83,500	155,000

	Thickness (in.)	Structural Sheathing			Structural I		
		A-A, A-C	Marine	All Other Grades	A-A, A-C	Marine	All Other Grades
Sanded Ply-wood	$\frac{1}{4}$	24,000	31,000	24,000	31,000	31,000	31,000
	$\frac{11}{32}$	25,500	33,000	25,500	33,000	33,000	33,000
	$\frac{3}{8}$	26,000	34,000	26,000	34,000	34,000	34,000
	$\frac{15}{32}$	38,000	49,500	38,000	49,500	49,500	49,500
	$\frac{1}{2}$	38,500	50,000	38,500	50,000	50,000	50,000
	$\frac{19}{32}$	49,000	63,500	49,000	63,500	63,500	63,500
	$\frac{5}{8}$	49,500	64,500	49,500	64,500	64,500	64,500
	$\frac{23}{32}$	50,500	65,500	50,500	65,500	65,500	65,500
	$\frac{3}{4}$	51,000	66,500	51,000	66,500	66,500	66,500
	$\frac{7}{8}$	52,500	68,500	52,500	68,500	68,500	68,500
	1	73,500	95,500	73,500	95,500	95,500	95,500
	$1\frac{1}{8}$	75,000	97,500	75,000	97,500	97,500	97,500

For SI: 1 inch = 25.4 mm, 1 pound/inch = 0.1751 N/mm.

a. 5-ply applies to plywood with five or more layers. For 5-ply plywood with three layers, use values for 4-ply panels.

**2305.5 Hold-down connectors.** In Seismic Design Category D, E or F, hold-down connectors shall be designed to resist shear wall overturning moments using approved cyclic load values or 75 percent of the allowable seismic load values that do not consider cyclic loading of the product. Connector bolts into wood framing shall require steel plate washers on the post on the opposite side of the anchorage device. Plate size shall be a minimum of 0.229 inch by 3 inches by 3 inches (5.82 mm by 76 mm by 76 mm) in size. Hold-down connectors shall be finger tight and  $\frac{1}{2}$  turn just prior to covering the wall framing.

## SECTION 2306 ALLOWABLE STRESS DESIGN

**2306.1 Allowable stress design.** The design and construction of wood elements in structures using allowable stress design shall be in accordance with the applicable standards listed in Table 2306.1.

**2306.1.1 Joists and rafters.** The design of rafter spans is permitted to be in accordance with the AWC STJR.

**2306.1.2 Plank and beam flooring.** The design of plank and beam flooring is permitted to be in accordance with the AWC Wood Construction Data No. 4.

**2306.1.3 Treated wood stress adjustments.** The allowable unit stresses for preservative-treated wood need not be adjusted for treatment, but are subject to other adjustments.

The allowable unit stresses for fire-retardant-treated wood, including fastener values, shall be developed from an approved method of investigation that considers the effects of anticipated temperature and humidity to which the fire-retardant-treated wood will be subjected, the type of treatment and the redrying process. Other adjustments are applicable except that the impact load duration shall not apply.

**2306.1.4 Lumber decking.** The capacity of lumber decking arranged according to the patterns described in Section 2304.9.2 shall be the lesser of the capacities determined for moment and deflection according to the formulas in Table 2306.1.4.

**TABLE 2306.1  
STANDARDS FOR DESIGN AND  
CONSTRUCTION OF WOOD ELEMENTS  
IN STRUCTURES USING ALLOWABLE STRESS DESIGN**

STANDARDS PROMULGATOR	STANDARD	TITLE
<b>American Wood Council</b>		
	ANSI/AWC NDS	National Design Specification for Wood Construction
	SDPWS	Special Design Provisions for Wind and Seismic
<b>American Society of Agricultural and Biological Engineers</b>		
	ASABE EP 484.3	Diaphragm Design of Metal-clad, Wood-Frame Rectangular Buildings
	ASABE EP 486.3	Shallow Post and Pier Foundation Design
	ASABE EP 559.1	Design Requirements and Bending Properties for Mechanically Laminated Wood Assemblies
<b>APA—The Engineered Wood Association</b>		
	ANSI 117	Standard Specifications for Structural Glued Laminated Timber of Softwood Species
	ANSI A190.1	Structural Glued Laminated Timber Panel Design Specification
		Plywood Design Specification Supplement 1—Design & Fabrication of Plywood Curved Panel
		Plywood Design Specification Supplement 2—Design & Fabrication of Glued Plywood-lumber Beams
		Plywood Design Specification Supplement 3—Design & Fabrication of Plywood Stressed-skin Panels
		Plywood Design Specification Supplement 4—Design & Fabrication of Plywood Sandwich Panels
		Plywood Design Specification Supplement 5—Design & Fabrication of All-plywood Beams
	APA T300	Glulam Connection Details
	APA S560	Field Notching and Drilling of Glued Laminated Timber Beams
	APA S475	Glued Laminated Beam Design Tables
	APA X450	Glulam in Residential Construction
	APA X440	Product and Application Guide: Glulam
	APA R540	Builders Tips: Proper Storage and Handling of Glulam Beams
<b>Truss Plate Institute, Inc.</b>		
	TPI 1	National Design Standard for Metal Plate Connected Wood Truss Construction
<b>West Coast Lumber Inspection Bureau</b>		
	AITC 104	Typical Construction Details
	AITC 110	Standard Appearance Grades for Structural Glued Laminated Timber
	AITC 113	Standard for Dimensions of Structural Glued Laminated Timber
	AITC 119	Standard Specifications for Structural Glued Laminated Timber of Hardwood Species
	AITC 200	Inspection Manual

**TABLE 2306.1.4  
ALLOWABLE LOADS FOR LUMBER DECKING**

PATTERN	ALLOWABLE AREA LOAD <sup>a</sup>	
	Moment	Deflection
Simple span	$w_b = \frac{8F_b'd^2}{l^2 6}$	$w_\Delta = \frac{384\Delta E'd^3}{5l^4 12}$
Two-span continuous	$w_b = \frac{8F_b'd^2}{l^2 6}$	$w_\Delta = \frac{185\Delta E'd^3}{l^4 12}$
Combination simple- and two-span continuous	$w_b = \frac{8F_b'd^2}{l^2 6}$	$w_\Delta = \frac{131\Delta E'd^3}{l^4 12}$
Cantilevered pieces intermixed	$w_b = \frac{20F_b'd^2}{3l^2 6}$	$w_\Delta = \frac{105\Delta E'd^3}{l^4 12}$
<b>Controlled random layup</b>		
Mechanically laminated decking	$w_b = \frac{20F_b'd^2}{3l^2 6}$	$w_\Delta = \frac{100\Delta E'd^3}{l^4 12}$
2-inch decking	$w_b = \frac{20F_b'd^2}{3l^2 6}$	$w_\Delta = \frac{100\Delta E'd^3}{l^4 12}$
3-inch and 4-inch decking	$w_b = \frac{8F_b'd^2}{l^2 6}$	$w_\Delta = \frac{116\Delta E'd^3}{l^4 12}$

For SI: 1 inch = 25.4 mm.

a.  $w_b$  = Allowable total uniform load limited by moment.

$w_\Delta$  = Allowable total uniform load limited by deflection.

$d$  = Actual decking thickness.

$l$  = Span of decking.

$F_b'$  = Allowable bending stress adjusted by applicable factors.

$E'$  = Modulus of elasticity adjusted by applicable factors.

**2306.2 Wood-frame diaphragms.** Wood-frame diaphragms shall be designed and constructed in accordance with AWC SDPWS. Where panels are fastened to framing members with staples, requirements and limitations of AWC DPWS shall be met and the allowable shear values set forth in Table 2306.2(1) or 2306.2(2) shall only be permitted for structures assigned to Seismic Design Category A, B or C.

**Exception:** Allowable shear values where panels are fastened to framing members with staples may be used if such values are substantiated by cyclic testing and approved by the building official.

The allowable shear values of Tables 2306.2(1) and 2306.2(2) are permitted to be increased 40 percent for wind design.

## WOOD

Wood structural panel diaphragms used to resist seismic forces in structures assigned to Seismic Design Category D, E or F shall be applied directly to the framing members.

**Exception:** Wood structural panel diaphragm is permitted to be fastened over solid lumber planking or laminated decking, provided the panel joints and lumber planking or laminated decking joints do not coincide.

**2306.2.1 Gypsum board diaphragm ceilings.** Gypsum board diaphragm ceilings shall be in accordance with Section 2508.6.

**2306.3 Wood-frame shear walls.** Wood-frame shear walls shall be designed and constructed in accordance with AWC SDPWS. For structures assigned to Seismic Design Category D, E or F, application of Tables 4.3A and 4.3B of AWC SDPWS shall include the following:

1. Wood structural panel thickness for shear walls shall not be less than  $\frac{3}{8}$  inch (9.525 mm) thick and studs shall not be spaced at more than 16 inches (406.4 mm) on center.
2. The maximum nominal unit shear capacities for three-ply plywood resisting seismic forces in structures

assigned to Seismic Design Category D, E or F is 400 pounds per linear foot (plf) (181.43 kg per meter).

3. Where shear design values using allowable stress design (ASD) exceed 350 plf or load and resistance factor design (LRFD) exceed 500 plf, all framing members receiving edge nailing from abutting panels shall not be less than a single 3 inch (76.19 mm) nominal member, or two 2 inch (50.8 mm) nominal members fastened together in accordance with Section 2306.1 to transfer the design shear value between framing members. Wood structural panel joint and sill plate nailing shall be staggered at all panel edges. See Sections 4.3.6.1 and 4.3.6.4.3 of AWC SDPWS for sill plate size and anchorage requirements.
4. Nails shall be placed not less than  $\frac{1}{2}$  inch (12.7 mm) in from the panel edges and not less than  $\frac{3}{8}$  inch (9.525 mm) from the edge of the connecting members for shear greater than 350 plf using ASD or 500 plf using LRFD. Nails shall be placed not less than  $\frac{3}{8}$  inch (9.525 mm) from panel edges and not less than  $\frac{1}{4}$  inch (6.35 mm) from the edge of the connecting members for shears of 350 plf or less using ASD or 500 plf or less using LRFD.

**TABLE 2306.2(1)**  
**ALLOWABLE SHEAR VALUES (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL DIAPHRAGMS**  
**UTILIZING STAPLES WITH FRAMING OF DOUGLAS FIR-LARCH, OR SOUTHERN PINE<sup>a</sup> FOR WIND OR SEISMIC LOADING<sup>f</sup>**

PANEL GRADE	STAPLE LENGTH AND GAGE <sup>d</sup>	MINIMUM FASTENER PENETRATION IN FRAMING (inches)	MINIMUM NOMINAL PANEL THICKNESS (inch)	MINIMUM NOMINAL WIDTH OF FRAMING MEMBERS AT ADJOINING PANEL EDGES AND BOUNDARIES <sup>e</sup> (inches)	BLOCKED DIAPHRAGMS				UNBLOCKED DIAPHRAGMS	
					Fastener spacing (inches) at diaphragm boundaries (all cases) at continuous panel edges parallel to load (Cases 3, 4), and at all panel edges (Cases 5, 6) <sup>b</sup>				Fasteners spaced 6 inches max. at supported edges <sup>b</sup>	
					6	4	2½ <sup>c</sup>	2 <sup>c</sup>	Case 1 (No unblocked edges or continuous joints parallel to load)	All other configurations (Cases 2, 3, 4, 5 and 6) <sup>a</sup>
					Fastener spacing (inches) at other panel edges (Cases 1, 2, 3 and 4) <sup>b</sup>					
					6	6	4	3		
Structural I grades	1½ 16 gage	1	⅜	2	175	235	350	400	155	115
				3	200	265	395	450	175	130
			15/32	2	175	235	350	400	155	120
				3	200	265	395	450	175	130
Sheathing, single floor and other grades covered in DOC PS 1 and PS 2	1½ 16 gage	1	⅜	2	160	210	315	360	140	105
				3	180	235	355	400	160	120
			7/16	2	165	225	335	380	150	110
				3	190	250	375	425	165	125
			15/32	2	160	210	315	360	140	105
				3	180	235	355	405	160	120
			19/32	2	175	235	350	400	155	115
				3	200	265	395	450	175	130

For SI: 1 inch = 25.4 mm, 1 pound per foot = 14.5939 N/m.

- a. For framing of other species: (1) Find specific gravity for species of lumber in ANSI/AWC NDS. (2) For staples find shear value from table for Structural I panels (regardless of actual grade) and multiply value by 0.82 for species with specific gravity of 0.42 or greater, or 0.65 for all other species.
- b. Space fasteners maximum 12 inches on center along intermediate framing members (6 inches on center where supports are spaced 48 inches on center).
- c. Framing at adjoining panel edges shall be 3 inches nominal or wider.
- d. Staples shall have a minimum crown width of  $\frac{7}{16}$  inch and shall be installed with their crowns parallel to the long dimension of the framing members.
- e. The minimum nominal width of framing members not located at boundaries or adjoining panel edges shall be 2 inches.
- f. For shear loads of normal or permanent load duration as defined by the ANSI/AWC NDS, the values in the table shall be multiplied by 0.63 or 0.56, respectively.
- g. For Case 1 through 6 descriptions see Figure 2306.2(1).

5. Table 4.3B of AWC SDPWS application is not allowed for structures assigned to Seismic Design Category D, E or F.

For structures assigned to Seismic Design Category D, application of Table 4.3C of AWC SDPWS shall not be used below the top level in a multi-level building for structures.

Where panels are fastened to framing members with staples, requirements and limitations of AWC SDPWS shall

be met and the allowable shear values set forth in CBC Tables 2306.3(1), 2306.3(2) or 2306.3(3) shall only be permitted for structures assigned to Seismic Design Category A, B or C.

**Exception:** Where panels are fastened to framing members with staples, allowable shear values may be used if such values are substantiated by cyclic testing and approved by the Superintendent of Building.

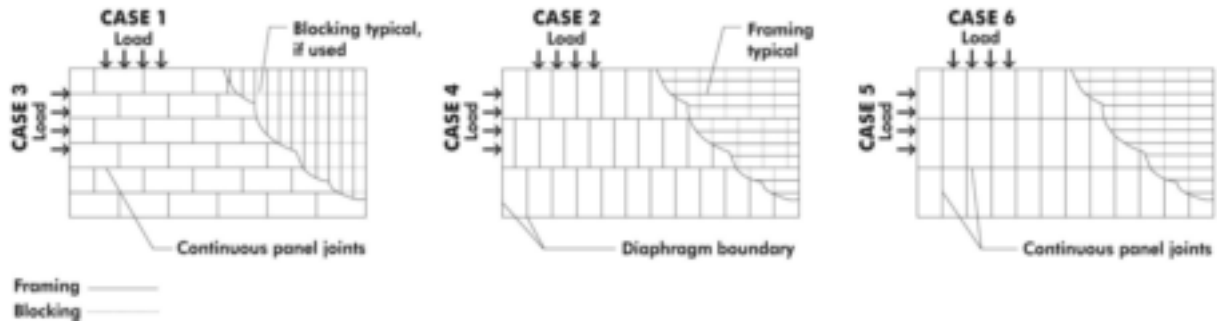


FIGURE 2306.2(1)  
CASES 1 THROUGH 6 FOR USE WITH TABLE 2306.2(1)

TABLE 2306.2(2)  
ALLOWABLE SHEAR VALUES (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL BLOCKED DIAPHRAGMS  
UTILIZING MULTIPLE ROWS OF STAPLES (HIGH-LOAD DIAPHRAGMS) WITH FRAMING OF  
DOUGLAS FIR-LARCH OR SOUTHERN PINE<sup>a</sup> FOR WIND OR SEISMIC LOADING<sup>b, g, h</sup>

PANEL GRADE <sup>c</sup>	STAPLE GAGE <sup>f</sup>	MINIMUM FASTENER PENETRATION IN FRAMING (inches)	MINIMUM NOMINAL PANEL THICKNESS (inch)	MINIMUM NOMINAL WIDTH OF FRAMING MEMBER AT ADJOINING PANEL EDGES AND BOUNDARIES <sup>e</sup>	LINES OF FASTENERS	BLOCKED DIAPHRAGMS					
						Cases 1 and 2 <sup>d</sup>					
						Fastener Spacing Per Line at Boundaries (inches) <sup>i</sup>					
						4	2 1/2	2			
						Fastener Spacing Per Line at Other Panel Edges (inches) <sup>i</sup>					
						6	4	4	3	3	2
Structural I grades	14 gage staples	2	15/32	3	2	600	600	860	960	1,060	1,200
				4	3	860	900	1,160	1,295	1,295	1,400
			19/32	3	2	600	600	875	960	1,075	1,200
				4	3	875	900	1,175	1,440	1,475	1,795
Sheathing single floor and other grades covered in DOC PS 1 and PS 2	14 gage staples	2	15/32	3	2	540	540	735	865	915	1,080
				4	3	735	810	1,005	1,105	1,105	1,195
			19/32	3	2	600	600	865	960	1,065	1,200
				4	3	865	900	1,130	1,430	1,370	1,485
			23/32	4	3	865	900	1,130	1,490	1,430	1,545

For SI: 1 inch = 25.4 mm, 1 pound per foot = 14.5939 N/m.

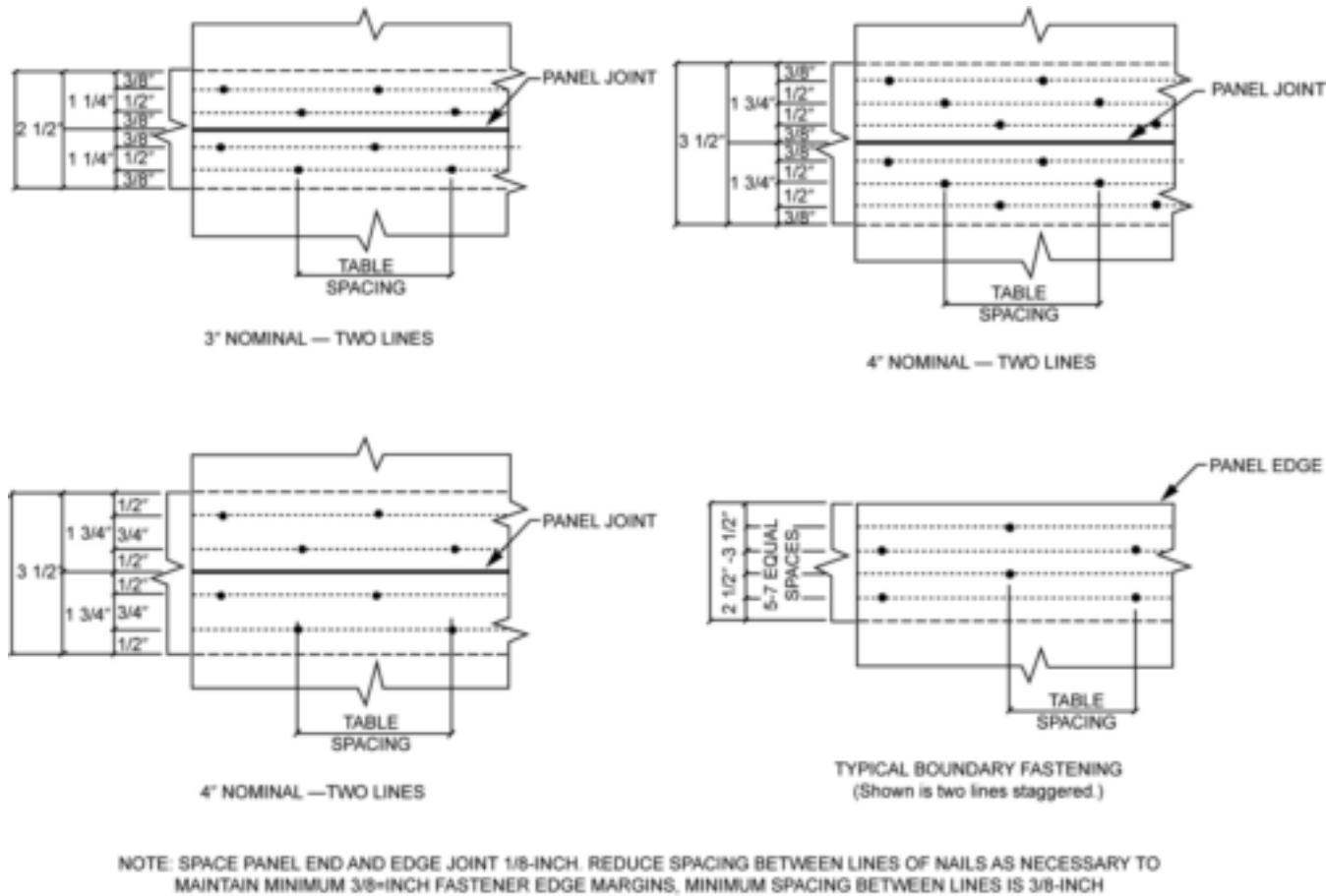
- For framing of other species: (1) Find specific gravity for species of framing lumber in ANSI/AWC NDS. (2) For staples, find shear value from table for Structural I panels (regardless of actual grade) and multiply value by 0.82 for species with specific gravity of 0.42 or greater, or 0.65 for all other species.
- Fastening along intermediate framing members: Space fasteners not greater than 12 inches on center, except 6 inches on center for spans greater than 32 inches.
- Panels conforming to DOC PS 1 or PS 2.
- This table gives shear values for Cases 1 and 2 as shown in Table 2306.2(1). The values shown are applicable to Cases 3, 4, 5 and 6 as shown in Table 2306.2(1), providing fasteners at all continuous panel edges are spaced in accordance with the boundary fastener spacing.
- The minimum nominal depth of framing members shall be 3 inches nominal. The minimum nominal width of framing members not located at boundaries or adjoining panel edges shall be 2 inches.
- Staples shall have a minimum crown width of 7/16 inch, and shall be installed with their crowns parallel to the long dimension of the framing members.
- High-load diaphragms shall be subject to special inspection in accordance with Section 1705.5.1.
- For shear loads of normal or permanent load duration as defined by the ANSI/AWC NDS, the values in the table shall be multiplied by 0.63 or 0.56, respectively.
- For fastener spacing diagrams see Figure 2306.2(2).

The allowable shear values in CBC Tables 2306.3(1) and 2306.3(2) are permitted to be increased 40 percent for wind design. Panels complying with ANSI/APA PRP-210 shall be permitted to use design values for Plywood Siding in the AWC SDPWS.

**2306.4 Shear walls sheathed with other materials.** Shear walls sheathed with Portland cement plaster, gypsum lath, gypsum sheathing or gypsum board shall be designed and constructed in accordance with AWC SDPWS. Shear walls sheathed with these materials are permitted to resist horizon-

tal forces using the allowable shear capacities set forth in Table 2306.3(3). Shear walls sheathed with Portland cement plaster, gypsum lath, gypsum sheathing or gypsum board shall not be used to resist seismic forces in structures assigned to Seismic Design Category E or F.

Shear walls sheathed with lath, plaster or gypsum board shall not be used below the top level in a multi-level building for structures assigned to Seismic Design Category D.



For SI: 1 inch = 25.4 mm.

FIGURE 2306.2(2)  
FASTENER SPACING DIAGRAMS FOR USE WITH TABLE 2306.2(2)

**2308.5.5 Openings in walls and partitions.** Openings in exterior and interior walls and partitions shall comply with Sections 2308.5.5.1 through 2308.5.5.3.

**2308.5.5.1 Openings in exterior bearing walls.** Headers shall be provided over each opening in exterior bearing walls. The size and spans in Table 2308.4.1.1(1) are permitted to be used for one- and two-family dwellings. Headers for other buildings shall be designed in accordance with Section 2302.1, Item 1 or 2. Headers of two or more pieces of nominal 2-inch (51 mm) framing lumber set on edge shall be permitted in accordance with Table 2308.4.1.1(1) and nailed together in accordance with Table 2304.10.2 or of solid lumber of equivalent size.

Single-member headers of nominal 2-inch (51 mm) thickness shall be framed with a single flat 2-inch-nominal (51 mm) member or wall plate not less in width than the wall studs on the top and bottom of the header in accordance with Figures 2308.5.5.1(1) and 2308.5.5.1(2) and face nailed to the top and bottom of the header with 10d box nails [3 inches  $\times$  0.128 inches (76 mm  $\times$  3.3 mm)] spaced 12 inches (305 mm) on center.

Wall studs shall support the ends of the header in accordance with Table 2308.4.1.1(1). Each end of a lintel or header shall have a bearing length of not less than 1½ inches (38 mm) for the full width of the lintel.

**2308.5.5.2 Openings in interior bearing partitions.** Headers shall be provided over each opening in interior bearing partitions as required in Section 2308.5.5.1. The spans in Table 2308.4.1.1(2) are permitted to be used. Wall studs shall support the ends of the header in accordance with Table 2308.4.1.1(1) or 2308.4.1.1(2), as applicable.

**2308.5.5.3 Openings in interior nonbearing partitions.** Openings in nonbearing partitions are permitted to be framed with single studs and headers. Each end of a lintel or header shall have a bearing length of not less than 1½ inches (38 mm) for the full width of the lintel.

**2308.5.6 Cripple walls.** Foundation cripple walls shall be framed of studs that are not less than the size of the stud-  
ding above. Exterior cripple wall studs shall be not less than 14 inches (356 mm) in length, or shall be framed of solid blocking. Where exceeding 4 feet (1219 mm) in height, such walls shall be framed of studs having the size

required for an additional story. See Section 2308.6.6 for cripple wall bracing.

**2308.5.7 Bridging.** Unless covered by interior or exterior wall coverings or sheathing meeting the minimum requirements of this code, stud partitions or walls with studs having a height-to-least-thickness ratio exceeding 50 shall have bridging that is not less than 2 inches (51 mm) in thickness and of the same width as the studs fitted snugly and nailed thereto to provide adequate lateral support. Bridging shall be placed in every stud cavity and at a frequency such that studs so braced shall not have a height-to-least-thickness ratio exceeding 50 with the height of the stud measured between horizontal framing and bridging or between bridging, whichever is greater.

**2308.5.8 Pipes in walls.** Stud partitions containing plumbing, heating or other pipes shall be framed and the joists underneath spaced to provide proper clearance for the piping. Where a partition containing piping runs parallel to the floor joists, the joists underneath such partitions shall be doubled and spaced to permit the passage of pipes and shall be bridged. Where plumbing, heating or other pipes are placed in, or partly in, a partition, necessitating the cutting of the soles or plates, a metal tie not less than 0.058 inch (1.47 mm) (16 galvanized gage) and 1½ inches (38 mm) in width shall be fastened to each plate across and to each side of the opening with not less than six 16d nails.

**2308.5.9 Cutting and notching.** In exterior walls and bearing partitions, a wood stud shall not be cut or notched in excess of 25 percent of its depth. In nonbearing partitions that do not support loads other than the weight of the partition, a stud shall not be cut or notched in excess of 40 percent of its depth.

**2308.5.10 Bored holes.** The diameter of bored holes in wood studs shall not exceed 40 percent of the stud depth. The diameter of bored holes in wood studs shall not exceed 60 percent of the stud depth in nonbearing partitions. The diameter of bored holes in wood studs shall not exceed 60 percent of the stud depth in any wall where each stud is doubled, provided that not more than two such successive doubled studs are so bored. The edge of the bored hole shall not be closer than ⅝ inch (15.9 mm) to the edge of the stud. Bored holes shall not be located at the same section of stud as a cut or notch.

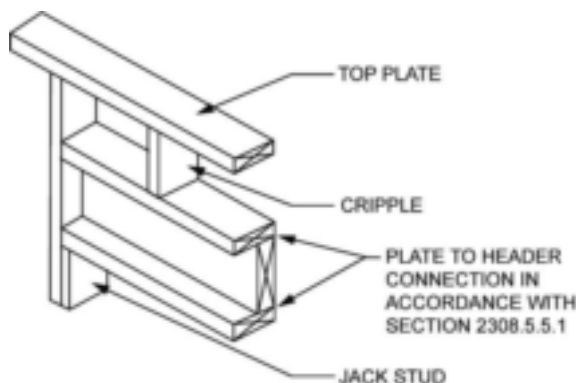


FIGURE 2308.5.5.1(1)  
SINGLE-MEMBER HEADER IN EXTERIOR BEARING WALL

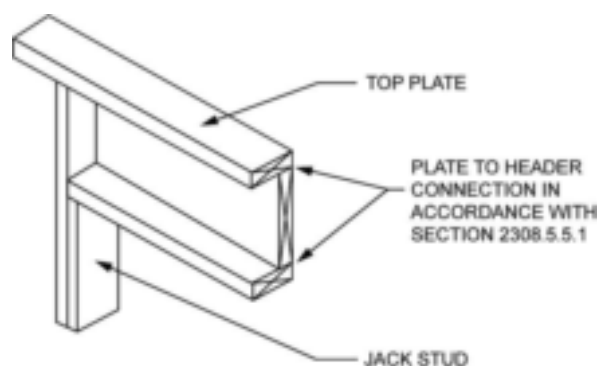


FIGURE 2308.5.5.1(2)  
ALTERNATIVE SINGLE-MEMBER HEADER WITHOUT CRIPPLE

**2308.5.11 Exterior wall sheathing.** Except where stucco construction that complies with Section 2510 is installed, the outside of exterior walls, including gables, of enclosed buildings shall be sheathed with one of the materials of the nominal thickness specified in Table 2308.5.11 with fasteners in accordance with the requirements of Section 2304.10 or fasteners designed in accordance with accepted engineering practice. Alternatively, sheathing materials and fasteners complying with Section 2304.6 shall be permitted.

**2308.6 Wall bracing.** Buildings shall be provided with exterior and interior braced wall lines as described in Sections 2308.6.1 through 2308.6.10.2.

**2308.6.1 Braced wall lines.** For the purpose of determining the amount and location of bracing required along each story level of a building, braced wall lines shall be designated as straight lines through the building plan in both the longitudinal and transverse direction and placed in accordance with Table 2308.6.1 and Figure 2308.6.1. Braced wall line spacing shall not exceed the distance specified in Table 2308.6.1. In structures assigned to Seismic Design Category D or E, braced wall lines shall intersect perpendicularly to each other.

Wall framing to which sheathing used for bracing is applied shall be nominal 2-inch-wide [actual 1½ inch (38 mm)] or larger members. Braced wall panel construction types shall not be mixed within a braced wall line. Braced wall panels required by Section 2308.6.1 may be eliminated when all of the following requirements are met:

1. One-story detached Group U occupancies not more than 25 feet in depth or length.
2. The roof and three enclosing walls are solid sheathed with ½-inch (12.7 mm) nominal thickness wood structural panels with 8d common nails placed ¾-inch (9.525 mm) from panel edges and spaced not more than 6 inches (152.4 mm) on center along all panel edges and 12 inches (304.8 mm) on center along intermediate framing members. Wall openings for doors or windows are permitted provided a minimum 4-foot-wide (1219.2 mm) wood structural braced panel with minimum height-to-length ratio of 2 to 1 is provided at each end of the wall line and that the wall line be sheathed for 50 percent of its length.

Cripple wall bracing in Seismic Design Categories D and E shall be constructed in accordance with Section 2308.6.6.2.

**2308.6.2 Braced wall panels.** Braced wall panels shall be placed along braced wall lines in accordance with Table 2308.6.1 and Figure 2308.6.1 and as specified in Table 2308.6.3(1). A braced wall panel shall be located at each end of the braced wall line and at the corners of intersecting braced wall lines or shall begin within the maximum distance from the end of the braced wall line in accordance with Table 2308.6.1. Braced wall panels in a braced wall line shall not be offset from each other by more than 4 feet (1219 mm). Braced wall panels shall be clearly indicated on the plans.

**2308.6.3 Braced wall panel methods.** Construction of braced wall panels shall be by one or a combination of the methods in Table 2308.6.3(1). Braced wall panel length shall be in accordance with Section 2308.6.4 or 2308.6.5.

**2308.6.4 Braced wall panel construction.** For Methods DWB, WSP, SFB, PBS, PCP and HPS, each panel must be not less than 48 inches (1219 mm) in length, covering three stud spaces where studs are spaced 16 inches (406 mm) on center and covering two stud spaces where studs are spaced 24 inches (610 mm) on center. Braced wall panels less than 48 inches (1219 mm) in length shall not contribute toward the amount of required bracing. Braced wall panels that are longer than the required length shall be credited for their actual length. For Method GB, each panel must be not less than 96 inches (2438 mm) in length where applied to one side of the studs or 48 inches (1219 mm) in length where applied to both sides.

Vertical joints of panel sheathing shall occur over studs and adjacent panel joints shall be nailed to common framing members. Horizontal joints shall occur over blocking or other framing equal in size to the studding except where waived by the installation requirements for the specific sheathing materials. Sole plates shall be nailed to the floor framing in accordance with Section 2308.6.7 and top plates shall be connected to the framing above in accordance with Section 2308.6.7.2. Where joists are perpendicular to braced wall lines above, blocking shall be provided under and in line with the braced wall panels.

**2308.6.5 Alternative bracing.** An alternate braced wall (ABW) or a portal frame with hold-downs (PFH) described in this section is permitted to substitute for a 48-inch (1219 mm) braced wall panel of Method DWB, WSP, SFB, PBS, PCP or HPS. For Method GB, each 96-inch (2438 mm) section (applied to one face) or 48-inch (1219 mm) section (applied to both faces) or portion thereof required by Table

**TABLE 2308.5.11  
MINIMUM THICKNESS OF WALL SHEATHING**

SHEATHING TYPE	MINIMUM THICKNESS	MAXIMUM WALL STUD SPACING
Diagonal wood boards	5/8 inch	24 inches on center
Structural fiberboard	1/2 inch	16 inches on center
Wood structural panel	In accordance with Tables 2308.6.3(2) and 2308.6.3(3)	—
M-S “Exterior Glue” and M-2 “Exterior Glue” particleboard	In accordance with Section 2306.3 and Table 2308.6.3(4)	—
Gypsum sheathing	1/2 inch	16 inches on center
Reinforced cement mortar	1 inch	24 inches on center
Hardboard panel siding	In accordance with Table 2308.6.3(5)	—

For SI: 1 inch = 25.4 mm.



**TABLE 2308.6.3(5)  
HARDBOARD SIDING**

SIDING	MINIMUM NOMINAL THICKNESS (inch)	2 × 4 FRAMING MAXIMUM SPACING	NAIL SIZE <sup>a, b, d</sup>	NAIL SPACING	
				General	Bracing panels <sup>c</sup>
1. Lap siding					
Direct to studs	<sup>3</sup> / <sub>8</sub>	16" o.c.	8d	16" o.c.	Not applicable
Over sheathing	<sup>3</sup> / <sub>8</sub>	16" o.c.	10d	16" o.c.	Not applicable
2. Square edge panel siding					
Direct to studs	<sup>3</sup> / <sub>8</sub>	24" o.c.	6d	6" o.c. edges; 12" o.c. at intermediate supports	4" o.c. edges; 8" o.c. at intermediate supports
Over sheathing	<sup>3</sup> / <sub>8</sub>	24" o.c.	8d	6" o.c. edges; 12" o.c. at intermediate supports	4" o.c. edges; 8" o.c. at intermediate supports
3. Shiplap edge panel siding					
Direct to studs	<sup>3</sup> / <sub>8</sub>	16" o.c.	6d	6" o.c. edges; 12" o.c. at intermediate supports	4" o.c. edges; 8" o.c. at intermediate supports
Over sheathing	<sup>3</sup> / <sub>8</sub>	16" o.c.	8d	6" o.c. edges; 12" o.c. at intermediate supports	4" o.c. edges; 8" o.c. at intermediate supports

For SI: 1 inch = 25.4 mm.

a. Nails shall be corrosion resistant.

b. Minimum acceptable nail dimensions:

	Panel Siding (inch)	Lap Siding (inch)
Shank diameter	0.092	0.099
Head diameter	0.225	0.240

c. Where used to comply with Section 2308.6.

d. Nail length must accommodate the sheathing and penetrate framing  $1\frac{1}{2}$  inches.

2308.6.1 is permitted to be replaced by one panel constructed in accordance with Method ABW or PFH.

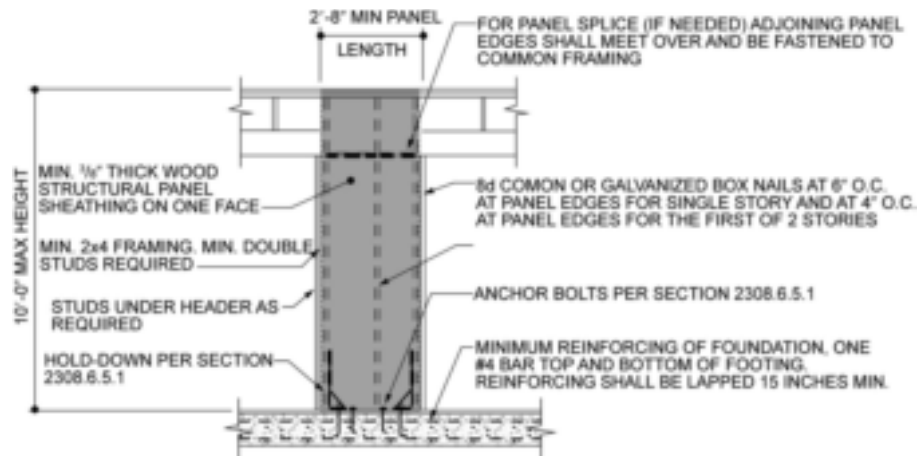
**2308.6.5.1 Alternate braced wall (ABW).** An ABW shall be constructed in accordance with this section and Figure 2308.6.5.1. In one-story buildings, each panel shall have a length of not less than 2 feet 8 inches (813 mm) and a height of not more than 10 feet (3048 mm). Each panel shall be sheathed on one face with  $\frac{15}{32}$ -inch (11.9 mm) minimum-thickness wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Table 2304.10.2 and blocked at wood structural panel edges. Two anchor bolts installed in accordance with Section 2308.3.1 shall be provided in each panel. Anchor bolts shall be placed at each panel outside quarter points. Each panel end stud shall have a hold-down device fastened to the foundation, capable of providing an approved uplift capacity of not less than 1,800 pounds (8006 N). The hold-down device shall be installed in accordance with the manufacturer's recommendations. The ABW shall be supported directly on a foundation or on floor framing supported directly on a foundation that is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom. Where the continuous foundation is required to have a depth greater than 12 inches (305 mm), a minimum 12-inch by 12-inch (305 mm by 305 mm) continuous footing or turned-down slab edge is permitted at door openings in the braced wall line. This continuous footing or turned-down slab edge shall be reinforced with not less than

one No. 4 bar top and bottom. This reinforcement shall be lapped 15 inches (381 mm) with the reinforcement required in the continuous foundation located directly under the braced wall line.

Where the ABW is installed at the first story of two-story buildings, the wood structural panel sheathing shall be provided on both faces, three anchor bolts shall be placed at one-quarter points and tie-down device uplift capacity shall be not less than 3,000 pounds (13 344 N).

**2308.6.5.2 Portal frame with hold-downs (PFH).** A PFH shall be constructed in accordance with this section and Figure 2308.6.5.2. The adjacent door or window opening shall have a full-length header.

In one-story buildings, each panel shall have a length of not less than 16 inches (406 mm) and a height of not more than 10 feet (3048 mm). Each panel shall be sheathed on one face with a single layer of  $\frac{15}{32}$ -inch (11.9 mm) minimum-thickness wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Figure 2308.6.5.2. The wood structural panel sheathing shall extend up over the solid sawn or glued-laminated header and shall be nailed in accordance with Figure 2308.6.5.2. A built-up header consisting of not fewer than two 2-inch by 12-inch (51 mm by 305 mm) boards, fastened in accordance with Item 24 of Table 2304.10.2, shall be permitted to be used. A spacer, if used, shall be placed on the side of the built-up beam opposite the wood structural panel sheathing. The header shall extend between the inside



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

**FIGURE 2308.6.5.1  
ALTERNATE BRACED WALL PANEL (ABW)**

faces of the first full-length outer studs of each panel. The clear span of the header between the inner studs of each panel shall be not less than 6 feet (1829 mm) and not more than 18 feet (5486 mm) in length. A strap with an uplift capacity of not less than 1,000 pounds (4400 N) shall fasten the header to the inner studs opposite the sheathing. One anchor bolt not less than  $\frac{5}{8}$  inch (15.9 mm) diameter and installed in accordance with Section 2308.3.1 shall be provided in the center of each sill plate. The studs at each end of the panel shall have a hold-down device fastened to the foundation with an uplift capacity of not less than 3,500 pounds (15 570 N).

Where a panel is located on one side of the opening, the header shall extend between the inside face of the first full-length stud of the panel and the bearing studs at the other end of the opening. A strap with an uplift capacity of not less than 1,000 pounds (4400 N) shall fasten the header to the bearing studs. The bearing studs shall have a hold-down device fastened to the foundation with an uplift capacity of not less than 1,000 pounds (4400 N). The hold-down devices shall be an embedded strap type, installed in accordance with the manufacturer's recommendations. The PFH panels shall be supported directly on a foundation that is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom. Where the continuous foundation is required to have a depth greater than 12 inches (305 mm), a minimum 12-inch by 12-inch (305 mm by 305 mm) continuous footing or turned-down slab edge is permitted at door openings in the braced wall line. This continuous footing or turned-down slab edge shall be reinforced with not less than one No. 4 bar top and bottom. This reinforcement shall be lapped not less than 15 inches (381 mm) with the reinforcement required in the continuous foundation located directly under the braced wall line.

Where a PFH is installed at the first story of two-story buildings, each panel shall have a length of not less than 24 inches (610 mm).

**2308.6.6 Cripple wall bracing.** Cripple walls shall be braced in accordance with Section 2308.6.6.1 or 2308.6.6.2.

**2308.6.6.1 Cripple wall bracing in Seismic Design Categories A, B and C.** For the purposes of this section, cripple walls in Seismic Design Categories A, B and C having a stud height exceeding 14 inches (356 mm) shall be considered to be a story and shall be braced in accordance with Table 2308.6.1. Spacing of edge nailing for required cripple wall bracing shall not exceed 6 inches (152 mm) on center along the foundation plate and the top plate of the cripple wall. Nail size, nail spacing for field nailing and more restrictive boundary nailing requirements shall be as required elsewhere in the code for the specific bracing material used.

**2308.6.6.2 Cripple wall bracing in Seismic Design Categories D and E.** For the purposes of this section, cripple walls in Seismic Design Categories D and E shall not have a stud height exceeding 14 inches (356 mm), and studs shall be solid blocked in accordance with Section 2308.5.6 for the full dwelling perimeter and for the full length of interior braced walls lines supported on foundations, excepting ventilation and access openings.

**2308.6.7 Connections of braced wall panels.** Braced wall panel joints shall occur over studs or blocking. Braced wall panels shall be fastened to studs, top and bottom plates and at panel edges. Braced wall panels shall be applied to nominal 2-inch-wide [actual  $1\frac{1}{2}$ -inch (38 mm)] or larger stud framing.

**2308.6.7.1 Bottom plate connection.** Braced wall line bottom plates shall be connected to joists or full-depth blocking below in accordance with Table 2304.10.2, or to foundations in accordance with Section 2308.6.7.3.

**2308.6.8.1 Foundation requirements.** Braced wall lines shall be supported by continuous foundations.

**Exception:** For structures with a maximum plan dimension not more than 50 feet (15 240 mm), continuous foundations are required at exterior walls only for structures not assigned to Seismic Design Category D, E or F.

For structures in Seismic Design Categories D and E, exterior braced wall panels shall be in the same plane vertically with the foundation or the portion of the structure containing the offset shall be designed in accordance with accepted engineering practice and Section 2308.1.1.

**Exceptions:**

1. Exterior braced wall panels shall be permitted to be located not more than 4 feet (1219 mm) from the foundation below where supported by a floor constructed in accordance with all of the following:
  - 1.1. Cantilevers or setbacks shall not exceed four times the nominal depth of the floor joists.
  - 1.2. Floor joists shall be 2 inches by 10 inches (51 mm by 254 mm) or larger and spaced not more than 16 inches (406 mm) on center.
  - 1.3. The ratio of the back span to the cantilever shall be not less than 2 to 1.
  - 1.4. Floor joists at ends of braced wall panels shall be doubled.
  - 1.5. A continuous rim joist shall be connected to the ends of cantilevered joists. The rim joist is permitted to be spliced using a metal tie not less than 0.058 inch (1.47 mm) (16 galvanized gage) and 1½ inches (38 mm) in width fastened with six 16d common nails on each side. The metal tie shall have a yield stress not less than 33,000 psi (227 MPa).
  - 1.6. Joists at setbacks or the end of cantilevered joists shall not carry gravity loads from more than a single story having uniform wall and roof loads nor carry the reactions from headers having a span of 8 feet (2438 mm) or more.
2. The end of a required braced wall panel shall be allowed to extend not more than 1 foot (305 mm) over an opening in the wall below. This requirement is applicable to braced wall panels offset in plane and braced wall panels offset out of plane as permitted by Exception 1. Braced wall panels are permitted to extend over an opening not more than 8 feet (2438 mm) in width where the header is a 4-inch by 12-inch (102 mm by 305 mm) or larger member.

**2308.6.8.2 Floor and roof diaphragm support in Seismic Design Categories D and E.** In structures assigned to Seismic Design Categories D or E, floor and roof diaphragms shall be laterally supported by braced wall lines on all edges and connected in accordance with Section 2308.6.7 [see Figure 2308.6.8.2(1)].

**Exception:** Portions of roofs or floors that do not support braced wall panels above are permitted to extend up to 6 feet (1829 mm) beyond a braced wall line [see Figure 2308.6.8.2(2)] provided that the framing members are connected to the braced wall line below in accordance with Section 2308.6.7.

**2308.6.8.3 Stepped footings in Seismic Design Categories B, C, D and E.** In Seismic Design Categories B, C, D and E, where the height of a required braced wall panel extending from foundation to floor above varies more than 4 feet (1219 mm), the following construction shall be used:

1. Where the bottom of the footing is stepped and the lowest floor framing rests directly on a sill bolted to the footings, the sill shall be anchored as required in Section 2308.3.
2. Where the lowest floor framing rests directly on a sill bolted to a footing not less than 8 feet (2438 mm) in length along a line of bracing, the line shall be considered to be braced. The double plate of the cripple stud wall beyond the segment of footing extending to the lowest framed floor shall be spliced to the sill plate with metal ties, one on each side of the sill and plate. The metal ties shall be not less than 0.058 inch [1.47 mm (16 galvanized gage)] by 1½ inches (38 mm) in width by 48 inches (1219 mm) with eight 16d common nails on each side of the splice location (see Figure 2308.6.8.3). The metal tie shall have a yield stress not less than 33,000 pounds per square inch (psi) (227 MPa).
3. Where cripple walls occur between the top of the footing and the lowest floor framing, the bracing requirements for a story shall apply.

**2308.6.9 Attachment of sheathing.** Fastening of braced wall panel sheathing shall be not less than that prescribed in Tables 2308.6.1 and 2304.10.2. Wall sheathing shall not be attached to framing members by adhesives. Staple fasteners in Table 2304.10 shall not be used to resist or transfer seismic forces in structures assigned to Seismic Design Category D, E or F.

**Exception:** Staples may be used to resist or transfer seismic forces when the allowable shear values are substantiated by cyclic testing and approved by the Superintendent of Building.

All braced wall panels shall extend to the roof sheathing and shall be attached to parallel roof rafters or blocking above with framing clips (18 gauge minimum) spaced at maximum 24 inches (6096 mm) on center four 8d nails per leg (total 8d nails per clip). Braced wall panels shall be laterally braced at each top corner and at maximum 24-inch (6096 mm) intervals along the top plate of discontinuous vertical framing.

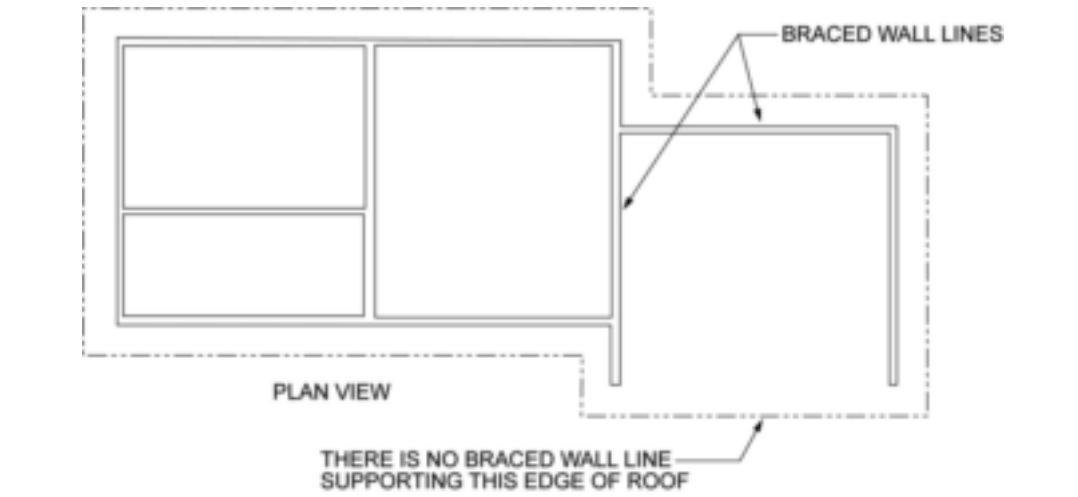
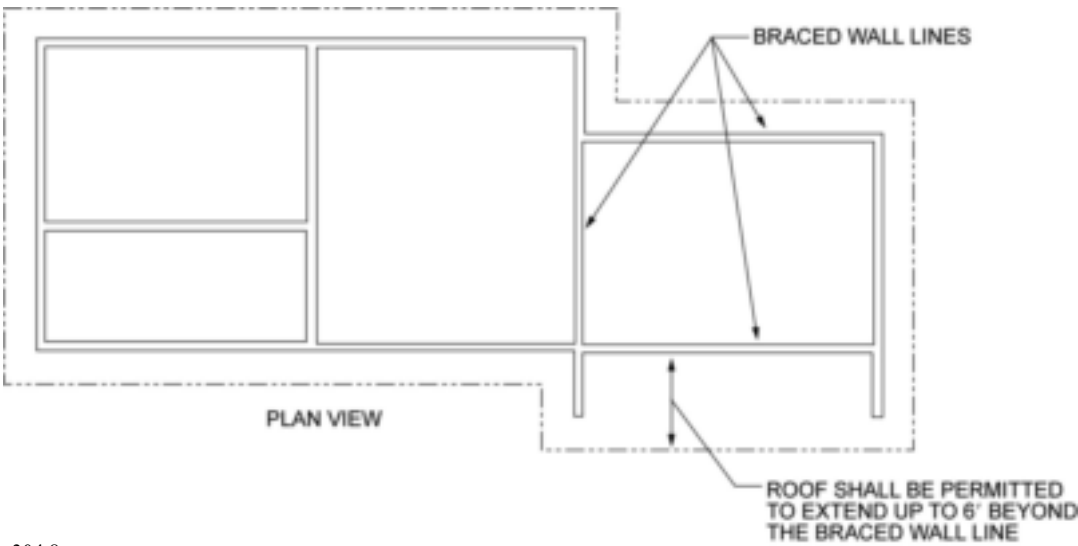
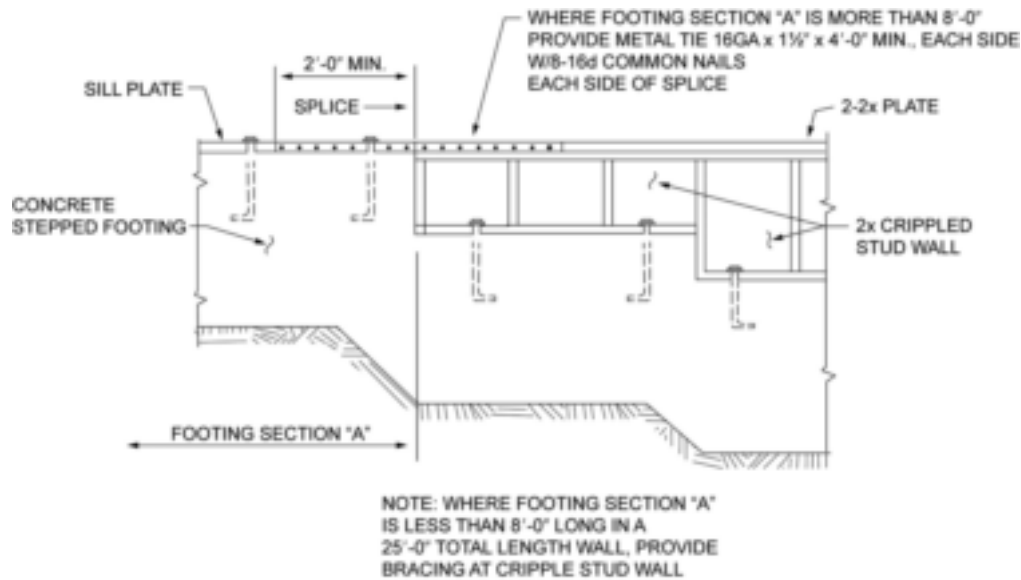


FIGURE 2308.6.8.2(1)  
ROOF IN SDC D OR E NOT SUPPORTED ON ALL EDGES



For SI: 1 foot = 304.8 mm.

FIGURE 2308.6.8.2(2)  
ROOF EXTENSION IN SDC D OR E BEYOND BRACED WALL LINE



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

**FIGURE 2308.6.8.3**  
**STEPPED FOOTING CONNECTION DETAILS**

**2308.6.10 Limitations of concrete or masonry veneer.** Concrete or masonry veneer shall comply with Chapter 14 and this section.

**2308.6.10.1 Limitations of concrete or masonry veneer in Seismic Design Category B or C.** In Seismic Design Categories B and C, concrete or masonry walls and stone or masonry veneer shall not extend above a basement.

**Exceptions:**

1. In structures assigned to Seismic Design Category B, stone and masonry veneer is permitted to be used in the first two stories above grade plane or the first three stories above grade plane where the lowest story has concrete or masonry walls, provided that wood structural panel wall bracing is used and the length of bracing provided is one and one-half times the required length specified in Table 2308.6.1.
2. Stone and masonry veneer is permitted to be used in the first story above grade plane or the first two stories above grade plane where the lowest story has concrete or masonry walls.
3. Stone and masonry veneer is permitted to be used in both stories of buildings with two stories above grade plane, provided that the following criteria are met:
  - 3.1. Type of brace in accordance with Section 2308.6.1 shall be WSP and the allowable shear capacity in accordance with Section 2306.3 shall be not less than 350 plf (5108 N/m).
  - 3.2. Braced wall panels in the second story shall be located in accordance with Section 2308.6.1 and not more

than 25 feet (7620 mm) on center, and the total length of braced wall panels shall be not less than 25 percent of the braced wall line length. Braced wall panels in the first story shall be located in accordance with Section 2308.6.1 and not more than 25 feet (7620 mm) on center, and the total length of braced wall panels shall be not less than 45 percent of the braced wall line length.

- 3.3. Hold-down connectors with an allowable capacity of 2,000 pounds (8896 N) shall be provided at the ends of each braced wall panel for the second story to the first story connection. Hold-down connectors with an allowable capacity of 3,900 pounds (17 347 N) shall be provided at the ends of each braced wall panel for the first story to the foundation connection. In all cases, the hold-down connector force shall be transferred to the foundation.

- 3.4. Cripple walls shall not be permitted.

**2308.6.10.2 Limitations of concrete or masonry in Seismic Design Categories D and E.** In Seismic Design Categories D and E, concrete or masonry walls and stone or masonry veneer shall not extend above a basement.

**Exception:** In structures assigned to Seismic Design Category D, stone and masonry veneer is permitted to be used in the first story above grade plane, provided that the following criteria are met:

1. Type of brace in accordance with Section 2308.6.1 shall be WSP and the allowable shear

capacity in accordance with Section 2306.3 shall be not less than 350 plf (5108 N/m).

2. The braced wall panels in the first story shall be located at each end of the braced wall line and not more than 25 feet (7620 mm) on center, and the total length of braced wall panels shall be not less than 45 percent of the braced wall line length.
3. Hold-down connectors shall be provided at the ends of braced walls for the first floor to foundation with an allowable capacity of 2,100 pounds (9341 N).
4. Cripple walls shall not be permitted.
5. Anchored masonry and stone wall veneer not exceeding 5 inches (127 mm) in thickness shall conform to the requirements of Chapter 14 of this code and shall not extend more than 5 feet (1524 mm) above the first-story finished floor.

**2308.7 Roof and ceiling framing.** The framing details required in this section apply to roofs having a slope of not less than three units vertical in 12 units horizontal (25-percent slope). Where the roof slope is less than three units vertical in 12 units horizontal (25-percent slope), members supporting rafters and ceiling joists such as ridge board, hips and valleys shall be designed as beams.

**2308.7.1 Ceiling joist spans.** Spans for ceiling joists shall be in accordance with Table 2308.7.1(1) or 2308.7.1(2). For other grades and species, and other loading conditions, refer to the AWC STJR.

**2308.7.2 Rafter spans.** Spans for rafters shall be in accordance with Table 2308.7.2(1), 2308.7.2(2), 2308.7.2(3), 2308.7.2(4), 2308.7.2(5) or 2308.7.2(6). For other grades and species and other loading conditions, refer to the AWC STJR. The span of each rafter shall be measured along the horizontal projection of the rafter.

**2308.7.3 Ceiling joist and rafter framing.** Rafters shall be framed directly opposite each other at the ridge. There shall be a ridge board not less than 1-inch (25 mm) nominal thickness at ridges and not less in depth than the cut end of the rafter. At valleys and hips, there shall be a single valley or hip rafter not less than 2-inch (51 mm) nominal thickness and not less in depth than the cut end of the rafter.

**2308.7.3.1 Ceiling joist and rafter connections.** Ceiling joists and rafters shall be nailed to each other and the assembly shall be nailed to the top wall plate in accordance with Tables 2304.10.2 and 2308.7.5. Ceiling joists shall be continuous or securely joined where they meet over interior partitions and be fastened to adjacent rafters in accordance with Tables 2304.10.2 and 2308.7.3.1 to provide a continuous rafter tie across the building where such joists are parallel to the rafters. Ceiling joists shall have a bearing surface of not less than 1½ inches (38 mm) on the top plate at each end.

Where ceiling joists are not parallel to rafters, an equivalent rafter tie shall be installed in a manner to provide a continuous tie across the building, at a spacing of not more than 4 feet (1219 mm) on center. The connections shall be in accordance with Tables 2308.7.3.1 and

2304.10.2, or connections of equivalent capacities shall be provided. Where ceiling joists or rafter ties are not provided at the top of the rafter support walls, the ridge formed by these rafters shall be supported by a girder conforming to Section 2308.8. Rafter ties shall be spaced not more than 4 feet (1219 mm) on center.

Rafter tie connections shall be based on the equivalent rafter spacing in Table 2308.7.3.1. Rafter-to-ceiling joist connections and rafter tie connections shall be of sufficient size and number to prevent splitting from nailing.

Roof framing member connection to braced wall lines shall be in accordance with Section 2308.6.7.2.

**2308.7.4 Notches and holes.** Notching at the ends of rafters or ceiling joists shall not exceed one-fourth the depth. Notches in the top or bottom of the rafter or ceiling joist shall not exceed one-sixth the depth and shall not be located in the middle one-third of the span, except that a notch not more than one-third of the depth is permitted in the top of the rafter or ceiling joist not further from the face of the support than the depth of the member. Holes bored in rafters or ceiling joists shall not be within 2 inches (51 mm) of the top and bottom and their diameter shall not exceed one-third the depth of the member.

**2308.7.5 Wind uplift.** The roof construction shall have rafter and truss ties to the wall below. Resultant uplift loads shall be transferred to the foundation using a continuous load path. The rafter or truss to wall connection shall comply with Tables 2304.10.2 and 2308.7.5.

**2308.7.6 Framing around openings.** Trimmer and header rafters shall be doubled, or of lumber of equivalent cross section, where the span of the header exceeds 4 feet (1219 mm). The ends of header rafters that are more than 6 feet (1829 mm) in length shall be supported by framing anchors or rafter hangers unless bearing on a beam, partition or wall.

**2308.7.6.1 Openings in roof diaphragms in Seismic Design Categories B, C, D and E.** In buildings classified as Seismic Design Category B, C, D or E, openings in horizontal diaphragms with a dimension that is greater than 4 feet (1219 mm) shall be constructed with metal ties and blocking in accordance with this section and Figure 2308.4.4.1(1). Metal ties shall be not less than 0.058 inch [1.47 mm (16 galvanized gage)] in thickness by 1½ inches (38 mm) in width and shall have a yield stress not less than 33,000 psi (227 Mpa). Blocking shall extend not less than the dimension of the opening in the direction of the tie and blocking. Ties shall be attached to blocking in accordance with the manufacturer's instructions but with not less than eight 16d common nails on each side of the header-joist intersection.

**2308.7.7 Purlins.** Purlins to support roof loads are permitted to be installed to reduce the span of rafters within allowable limits and shall be supported by struts to bearing walls. The maximum span of 2-inch by 4-inch (51 mm by 102 mm) purlins shall be 4 feet (1219 mm). The maximum span of the 2-inch by 6-inch (51 mm by 152 mm) purlin shall be 6 feet (1829 mm), but the purlin shall not be smaller than the supported rafter. Struts shall be not less than 2-inch by 4-inch (51 mm by 102 mm) members. The

## CHAPTER 25

# GYPSUM BOARD, GYPSUM PANEL PRODUCTS AND PLASTER

### User notes:

**About this chapter:** Chapter 25 contains the provisions and referenced standards that regulate the design, construction and quality of gypsum board, gypsum panel products and plaster and, in addition, addresses reinforced gypsum concrete. These materials are some of the most commonly used interior and exterior finish materials in the building industry. This chapter primarily addresses quality-control-related issues with regard to material specifications and installation requirements. Most products are manufactured in accordance with industry standards. The building official or inspector needs to verify that the appropriate product is used and properly installed for the intended use and location. Proper design and installation of these materials are necessary to provide weather resistance and required fire protection for both structural and nonstructural building components.

**Code development reminder:** Code change proposals to this chapter will be considered by the IBC—Structural Code Development Committee during the 2022 (Group B) Code Development Cycle.

### SECTION 2501 GENERAL

**2501.1 Scope.** Provisions of this chapter shall govern the materials, design, construction and quality of gypsum board, gypsum panel products, lath, gypsum plaster, cement plaster and reinforced gypsum concrete.

**2501.1.1 Application.** [DSA-SS, DSA-SS/CC & OSHPD]  
The scope of application of Chapter 25 is as follows:

1. Applications listed in Sections 1.10.1, 1.10.2, 1.10.4 and 1.10.5 regulated by the Office of State-wide Health Planning and Development (OSHPD). These applications include hospitals, hospital buildings removed from general acute care service, skilled nursing facility buildings, intermediate care facility buildings, correctional treatment centers and acute psychiatric hospital buildings.
2. Structures regulated by the Division of the State Architect—Structural Safety, which include those applications listed in Section 1.9.2.1 (DSA-SS) and 1.9.2.2 (DSA-SS/CC). These applications include public elementary and secondary schools, community colleges and state-owned or state-leased essential services buildings

**2501.1.2 Amendments in this chapter.** [DSA-SS, DSA-SS/CC, OSHPD] DSA-SS, DSA-SS/CC, OSHPD adopt this chapter and all amendments.

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

1. OSHPD amendments appear in this chapter preceded with the appropriate acronym, as follows:

[OSHPD 1] - For applications listed in Section 1.10.1.

[OSHPD 1R] - For applications listed in Section 1.10.1.

[OSHPD 2] - For applications listed in Section 1.10.2.

[OSHPD 4] - For applications listed in Section 1.10.4.

[OSHPD 5] - For applications listed in Section 1.10.5.

2. Division of the State Architect - Structural Safety:

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

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

**2501.1.3 Additional requirements.** [DSA-SS, DSA-SS/CC and OSHPD 1, 1R, 2, 4 & 5] Details of attachment for wall and ceiling coverings which are not provided for in this code shall be detailed in the approved construction documents.

**Exception:** Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light-steel-frame construction.

**2501.2 Other materials.** Other approved wall or ceiling coverings shall be permitted to be installed in accordance with the recommendations of the manufacturer and the conditions of approval.

### SECTION 2502 PERFORMANCE

**2502.1 General.** Lathing, plastering and gypsum board and gypsum panel product construction shall be done in the manner and with the materials specified in this chapter and, where required for fire protection, shall comply with the provisions of Chapter 7.

### SECTION 2503 INSPECTION

**2503.1 Inspection.** Lath and gypsum board shall be inspected in accordance with Section 108.5.

**2503.2 Additional requirements for inspection and testing. [DSA-SS, DSA-SS/CC and OSHPD 1, 1R, 2, 4 & 5]**

1. Lath, gypsum board and gypsum panel products shall be inspected in accordance with Chapter 17A and the California Administrative Code.
2. No lath, gypsum board and gypsum panel products or their attachments shall be covered or finished until it has been inspected and approved by the inspector of record and/or special inspector.
3. The enforcement agency may require tests in accordance with Table 2506.2 to determine compliance with the provisions of this code.
4. The testing of gypsum board and gypsum panel products shall conform with standards listed in Table 2506.2

**Exception: [OSHPD 2]** Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light-steel-frame construction.

**SECTION 2504  
VERTICAL AND HORIZONTAL ASSEMBLIES**

**2504.1 Scope.** The following requirements shall be met where construction involves gypsum board, gypsum panel products or lath and plaster in vertical and horizontal assemblies.

**2504.1.1 Wood framing.** Wood supports for lath, gypsum board or gypsum panel products, as well as wood stripping or furring, shall be not less than 2 inches (51 mm) nominal thickness in the least dimension.

**Exception:** The minimum nominal dimension of wood furring strips installed over solid backing shall be not less than 1 inch by 2 inches (25 mm by 51 mm).

**2504.1.2 Studless partitions.** The minimum thickness of vertically erected studless solid plaster partitions of  $\frac{3}{8}$ -inch (9.5 mm) and  $\frac{3}{4}$ -inch (19.1 mm) rib metal lath,  $\frac{1}{2}$ -inch-thick (12.7 mm) gypsum lath, gypsum board or gypsum panel product shall be 2 inches (51 mm).

**2504.2 Additional requirements. [DSA-SS, DSA-SS/CC and OSHPD 1, 1R, 2, 4 & 5]** In addition to the requirements of this section, the horizontal and vertical assemblies of plaster, gypsum board or gypsum panel products shall be designed to resist the loads specified in this code.

**2504.2.1 Wood furring strips.** Wood furring strips for ceilings fastened to floor or ceiling joist shall be nailed at each bearing with two common wire nails, one of which shall be a slant nail and the other a face nail, or by one nail having spirally grooved or annular grooved shanks approved by the enforcement agency for this purpose. All stripping nails shall penetrate not less than  $1\frac{3}{4}$  inches (44.5 mm) into the member receiving the point. Holes in stripping at joints shall be subdrilled to prevent splitting.

Where common wire nails are used to support horizontal wood stripping for plaster ceilings, such stripping shall be wire tied to the joists 4 feet (1219 mm) on center with two strands of No. 18 W&M gage galvanized annealed wire to an 8d common wire nail driven into

each side of the joist 2 inches (51 mm) above the bottom of the joist or to each end of a 16d common wire nail driven horizontally through the joist 2 inches (51 mm) above the bottom of the joist, and the ends of the wire secured together with three twists of the wire.

**Exception: [OSHPD 2]** Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light-steel-frame construction.

**SECTION 2505  
SHEAR WALL CONSTRUCTION**

**2505.1 Resistance to shear (wood framing).** Wood-frame shear walls sheathed with gypsum board, gypsum panel products or lath and plaster shall be designed and constructed in accordance with Section 2306.3 and are permitted to resist wind and seismic loads. Walls resisting seismic loads shall be subject to the limitations in Section 12.2.1 of ASCE 7.

**2505.2 Resistance to shear (steel framing).** Cold-formed steel-frame shear walls sheathed with gypsum board or gypsum panel products and constructed in accordance with the materials and provisions of Section 2211.1.1 are permitted to resist wind and seismic loads. Walls resisting seismic loads shall be subject to the limitations in Section 12.2.1 of ASCE 7.

**2505.3 [DSA-SS & DSA-SS/CC and OSHPD 1, 1R, 2, 4 & 5]** Section 2505.1 and 2505.2 are not permitted.

**Exception: [OSHPD 2]** Single-story Type V skilled nursing or intermediate care facilities utilizing wood-frame or light-steel-frame construction.

**SECTION 2506  
GYPSUM BOARD AND  
GYPSUM PANEL PRODUCT MATERIALS**

**2506.1 General.** Gypsum board, gypsum panel products and accessories shall be identified by the manufacturer's designation to indicate compliance with the appropriate standards referenced in this section and stored to protect such materials from the weather.

**2506.2 Standards.** Gypsum board and gypsum panel products shall conform to the appropriate standards listed in Table 2506.2 and Chapter 35 and, where required for fire protection, shall conform to the provisions of Chapter 7.

**2506.2.1 Other materials.** Metal suspension systems for acoustical and lay-in panel ceilings shall comply with ASTM C635 listed in Chapter 35 and Section 13.5.6 of ASCE 7 for installation in high seismic areas.

**SECTION 2507  
LATHING AND PLASTERING**

**2507.1 General.** Lathing and plastering materials and accessories shall be marked by the manufacturer's designation to indicate compliance with the appropriate standards referenced in this section and stored in such a manner to protect them from the weather.



## CHAPTER 27

# ELECTRICAL

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### User note:

**About this chapter:** Electrical systems and components are integral to most structures; therefore, it is necessary for the code to address their installation and protection. Structures depend on electricity for the operation of many life safety systems including fire alarm, smoke control and exhaust, fire suppression, fire command and communication systems. Since power supply to these systems is essential, Chapter 27 addresses where standby and emergency power must be provided.

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### SECTION 2701 GENERAL

**2701.1 Scope.** The provisions of this chapter and the *California Electrical Code* shall govern the design, construction, erection and installation of the electrical components, appliances, equipment and systems used in buildings and structures covered by this code. The *California Fire Code*, the *International Property Maintenance Code* and the *California Electrical Code* shall govern the use and maintenance of electrical components, appliances, equipment and systems. The *California Existing Building Code* and the *California Electrical Code* shall govern the alteration, repair, relocation, replacement and addition of electrical components, appliances, or equipment and systems.

### SECTION 2702 EMERGENCY AND STANDBY POWER SYSTEMS

**[F] 2702.1 General.** Emergency power systems and standby power systems shall comply with Sections 2702.1.1 through 2702.1.8.

**[F] 2702.1.1 Stationary generators.** Stationary emergency and standby power generators required by this code shall be listed in accordance with UL 2200.

**[F] 2702.1.2 Fuel-line piping protection.** Fuel lines supplying a generator set inside a high-rise building or new Group I-2 occupancy having occupied floors located more than 75 feet (23 m) above the lowest level of fire department vehicle access shall be separated from areas of the building other than the room the generator is located in by one of the following methods:

1. A fire-resistant pipe-protection system that has been tested in accordance with UL 1489. The system shall be installed as tested and in accordance with the manufacturer's installation instructions, and shall have a rating of not less than 2 hours. Where the building is protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, the required rating shall be reduced to 1 hour.
2. An assembly that has a fire-resistance rating of not less than 2 hours. Where the building is protected throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1, the required fire-resistance rating shall be reduced to 1 hour.
3. Other approved methods.

**[F] 2702.1.3 Installation.** Emergency power systems and standby power systems required by this code or the *California Fire Code* shall be installed in accordance with the *California Fire Code*, the *California Electrical Code*, NFPA 110 and NFPA 111.

**[F] 2702.1.4 Load transfer.** Emergency power systems shall automatically provide secondary power within 10 seconds after primary power is lost, unless specified otherwise in this code. Standby power systems shall automatically provide secondary power within 60 seconds after primary power is lost, unless specified otherwise in this code.

**[F] 2702.1.5 Load duration.** Emergency power systems and standby power systems shall be designed to provide the required power for a minimum duration of 2 hours without being refueled or recharged, unless specified otherwise in this code.

**[F] 2702.1.6 Uninterruptable power source.** An uninterrupted source of power shall be provided for equipment where required by the manufacturer's instructions, the listing, this code or applicable referenced standards.

**[F] 2702.1.7 Interchangeability.** Emergency power systems shall be an acceptable alternative for installations that require standby power systems.

**[F] 2702.1.8 Group I-2 occupancies.** In Group I-2 occupancies located in flood hazard areas established in Section 1612.3, where new essential electrical systems are installed, and where new essential electrical system generators are installed, the systems and generators shall be located and installed in accordance with ASCE 24. Where connections for hookup of temporary generators are provided, the connections shall be located at or above the elevation required in ASCE 24.

**[F] 2702.2 Where required.** Emergency and standby power systems shall be provided where required by Sections 2702.2.1 through 2702.2.19.

**[F] 2702.2.1 Ambulatory care facilities.** Essential electrical systems for ambulatory care facilities shall comply with Section 422.6.

**[F] 2702.2.2 Elevators and platform lifts.** Standby power shall be provided for elevators and platform lifts as required in Sections 1009.4.1, 1009.5, 3003.1, 3007.8 and 3008.8.



# CHAPTER 30

## ELEVATORS AND CONVEYING SYSTEMS

### User note:

**About this chapter:** Chapter 30 contains the provisions that regulate vertical and horizontal transportation and material-handling systems installed in buildings. This chapter also provides several elements that protect occupants and assist emergency responders during fires.

### SECTION 3001 GENERAL

**3001.1 Scope.** This Chapter governs the design, construction, installation, alteration and repair of elevators and conveying systems and their components. All elevators shall comply with the additional requirements of the Elevator Code. Whenever a conflict exists between this Chapter and the Elevator Code, the more restrictive of the two codes shall apply.

**3001.2 Emergency elevator communication systems for the deaf, hard of hearing and speech impaired.** An emergency two-way communication system shall be provided. The system shall provide visible text and audible modes that meet all of the following requirements:

1. When operating in each mode, include a live interactive system that allows back and forth conversation between the elevator occupants and emergency personnel.
2. Is operational when the elevator is operational.
3. Allows elevator occupants to select the text-based or audible mode depending on their communication needs to interact with emergency personnel.

**3001.3 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*, and the applicable standard specified in Table 3001.3 and ASCE 24 for construction in flood hazard areas established in Section 1612.3.

**TABLE 3001.3  
ELEVATORS AND CONVEYING SYSTEMS AND COMPONENTS**

TYPE	STANDARD
Automotive lifts	ALI ALCTV
Belt manlifts	ASME A90.1
Conveyors and related equipment	ASME B20.1
Elevators, escalators, dumbwaiters, moving walks, material lifts	ASME A17.1/CSA B44
Industrial scissor lifts	ANSI MH29.1
Platform lifts, stairway chairlifts, wheelchair lifts	ASME A18.1

**3001.4 Accessibility.** Passenger elevators and platform (wheelchair) lifts required to be accessible or to serve as part

of an accessible means of egress shall comply with Sections 1009 and either *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*.

**3001.5 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*.

**3001.6 Elevators utilized to transport hazardous materials.** Elevators utilized to transport hazardous materials shall also comply with the *California Fire Code Sections 5003.10.2.2, 5003.10.4 through 5003.10.7*.

### SECTION 3002 HOISTWAY ENCLOSURES

**3002.1 Hoistway enclosure protection.** Elevator, dumbwaiter and other hoistway enclosures shall be shaft enclosures complying with Sections 712 and 713.

**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 not fewer than 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 CASE OF FIRE, ELEVATORS ARE OUT OF SERVICE. 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 1009.4.
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, not fewer than 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 be not less than 3 inches (76 mm) in height 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. The medical emergency service elevator(s) shall be identified in the construction documents specified in Section 107 or the California Administrative Code.

**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 two emergency personnel, each requiring a minimum clear 21-inch (533 mm) diameter circular area and an ambulance gurney or stretcher [minimum size 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.

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

**3002.4.3a 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.

**3002.4.4a Designation.** Medical emergency elevators shall be identified by the international symbol (Star of Life) for emergency medical services.

**3002.4.5a Symbol size.** The symbol shall not be less than 3 inches (76 mm) in size.

**3002.4.6a 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.** Where an elevator is installed in a single blind hoistway or on the outside of a building, emergency doors shall be in conformance with the 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.

**3002.6.1 Prohibited hoistway access doors and panels.** The following types of access doors and panels are prohibited in accordance with the California Code Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders:

1. Access panels or doors to working platforms in the line of movement of the car counterweight in the hoistway.
2. Access panels or doors in the hoistway for access to car or hoistway transparent enclosures.

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

**Exception:** Elevators within open parking garages need not be separated from stairway enclosures.

**3002.8 Glass in elevator enclosures.** Glass in elevator enclosures shall comply with CBC Section 2409.2 and shall comply with the Elevator Code.

**3002.9 Plumbing and mechanical systems.** Plumbing and mechanical systems shall not be located in an elevator hoistway enclosure unless permitted by California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.

**Exception:** Floor drains and sumps shall be permitted at the base of the hoistway enclosure provided that they are indirectly connected to the plumbing system.

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**3002.10 Photoelectric tube bypass switch.**

**3002.10.1** 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.

**3002.10.2** 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.

**3002.10.3** 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.

**3002.10.4** The switch shall be clearly labeled *TO BE USED IN CASE OF FIRE ONLY*.

**3002.10.5** Switches shall be kept in working order or be removed when existing installations are arranged to comply with Section 3002.10.5, 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.

**3002.11 Pit access door.** Where separate pit access door(s) are required for access to pit(s) located below the bottom hoistway door landing, permanent stairway access shall be provided to the access door.

## 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 Section 1203 of the California Fire Code and Sections 3003.1.1 through 3003.1.5 of this code.

**[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, not less

than one elevator shall remain operable from the standby power source.

**[F] 3003.1.4 Temperature and humidity control.** Where standby power is connected to elevators, the machine room machine space, control room and control space ventilation or air conditioning system shall be connected to the standby power source.

**3003.1.5 Emergency hoistway venting.** Where standby power is connected to elevators, the emergency hoistway ventilation system, if required, 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.

**[F] 3003.3 Standardized fire service elevator keys.** All elevators shall be equipped to operate with a standardized fire service elevator key in accordance with the California Fire Code.

**3003.4 Emergency hoistway venting.** Elevator hoistways containing the driving machine shall be provided with a means for venting smoke and hot gases to the outer air in case of fire.

**3003.4.1 Location of vents.** Vents shall be located at the top of the hoistway and shall open either directly to the outer air or through noncombustible ducts to the outer air.

**3003.4.2 Area of vents.** Except as provided for in Section 3003.1.4.4, the area of the vents shall be not less than 3 1/2 percent of the area of the hoistway nor less than 3 square feet (0.28 m<sup>2</sup>) for each elevator car.

**3003.4.3 Operation of vents.** Vent openings shall automatically open upon detection of smoke in the elevator hoistway 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. Smoke detectors provided in elevator hoistways to activate the hoistway ventilation system, shall also be required to activate the elevator Phase I emergency recall operation function in accordance with Cali-

*California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.*

**3003.4.4 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 vents required by Section 3003.1.4.1 of the California Building Code do not have outside exposure.
2. The hoistway does not extend to the top of the building.
3. The hoistway exhaust fan is automatically reactivated by thermostatic means.
4. Equivalent venting of the hoistway is accomplished.

## SECTION 3004 CONVEYING SYSTEMS

**3004.1 General.** Escalators, moving walks, conveyors, personnel hoists and material hoists shall comply with the provisions of Sections 3004.2 through 3004.4.

**3004.2 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  $\frac{1}{28}$ -inch (0.9 mm) wood veneers on balustrades backed up with noncombustible materials.

**3004.2.1 Enclosure.** Escalator floor openings shall be enclosed with shaft enclosures complying with Section 713.

**3004.2.2 Escalators.** Where provided in below-grade transportation stations, escalators shall have a clear width of not less than 32 inches (815 mm).

**3004.3 Conveyors.** Conveyors and conveying systems shall comply with ASME B20.1.

**3004.3.1 Enclosure.** Conveyors and related equipment connecting successive floors or levels shall be enclosed with shaft enclosures complying with Section 713.

**3004.3.2 Conveyor safeties.** Power-operated conveyors, belts and other material-moving devices shall be equipped with automatic limit switches that will shut off the power in an emergency and automatically stop all operation of the device.

## SECTION 3005 MACHINE ROOMS

**3005.1 Access.** A permanent and approved means of access shall be provided to elevator machine rooms, control rooms, control spaces and machinery spaces.

**3005.2 Temperature and humidity control.** Elevator machine rooms, machinery spaces that contain the driving machine, and control rooms or spaces that contain the operation or motion controller 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 maintain the temperature and humidity

within the range established by the manufacturer of the elevator equipment.

**3005.3 Pressurization.** The elevator machine room, control rooms or control space with openings into a pressurized elevator hoistway shall be pressurized upon activation of a heat or smoke detector located in the elevator machine room, control room or control space.

**3005.5 Shunt trip.** Where elevator hoistways, elevator machine rooms, control rooms and control spaces containing elevator control equipment are protected with automatic sprinklers, a means installed in accordance with Section 21.4 of NFPA 72 shall be provided to automatically disconnect 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 automatic sprinklers outside the hoistway, machine room, machinery space, control room or control space shall not disconnect the main line power supply.

**3005.6 Plumbing systems.** Plumbing systems shall not be located in elevator equipment rooms.

## SECTION 3006 ELEVATOR LOBBIES AND HOISTWAY OPENING PROTECTION

**3006.1 General.** Elevator hoistway openings and enclosed elevator lobbies shall be provided in accordance with the following:

1. Where hoistway opening protection is required by Section 3006.2, such protection shall be in accordance with Section 3006.3.
2. Where enclosed elevator lobbies are required for underground buildings, such lobbies shall comply with Section 405.4.3.
3. Where an area of refuge is required and an enclosed elevator lobby is provided to serve as an area of refuge, the enclosed elevator lobby shall comply with Section 1009.6.
4. Where fire service access elevators are provided, enclosed elevator lobbies shall comply with Section 3007.6.
5. Where occupant evacuation elevators are provided, enclosed elevator lobbies shall comply with Section 3008.6.

**3006.2 Hoistway opening protection required.** Elevator hoistway door openings shall be protected in accordance with Section 3006.3 where an elevator hoistway connects more than two stories in Group A, E, H, I, L, R-1, R-2, R-2.1 and R-2.2 occupancies, high-rise buildings and other applications listed in Section 1.11 regulated by the Office of the State Fire Marshal, and more than three stories for all other occupancies. Hoistway opening protection is required to be enclosed within a shaft enclosure in accordance with Section 712.1.1 and any of the following conditions apply:

1. The building is not protected throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2.

2. *Group A occupancies.*
3. *Group E occupancies.*
4. *Group H occupancies.*
5. *Group I occupancies.*
6. *Group L occupancies.*
7. *Group R-1, R-2, R-2.1 and R-2.2 occupancies.*
8. *High-rise buildings.*

*See Section 403.6 for additional requirements for high-rise buildings.*

**Exceptions:**

1. Protection of elevator hoistway door openings is not required where the elevator serves only open parking garages in accordance with Section 406.5.
2. Protection of elevator hoistway door openings is not required at the level(s) of exit discharge, provided that the level(s) of exit discharge is equipped with an automatic sprinkler system in accordance with Section 903.3.1.1.
3. Enclosed elevator lobbies and protection of elevator hoistway door openings are not required on levels where the elevator hoistway opens to the exterior.

**3006.2.1 Rated corridors.** Where corridors are required to be fire-resistance rated in accordance with Section 1020.2, elevator hoistway openings shall be protected in accordance with Section 3006.3.

**3006.3 Hoistway opening protection.** Where Section 3006.2 requires protection of the elevator hoistway door opening, the protection shall be provided by one of the following:

1. An enclosed elevator lobby shall be provided at each floor to separate the elevator hoistway shaft enclosure doors from each floor by fire partitions in accordance with Section 708. In addition, doors protecting openings in the elevator lobby enclosure walls shall comply with Section 716.2.2.1 as required for corridor walls. Penetrations of the enclosed elevator lobby by ducts and air transfer openings shall be protected as required for corridors in accordance with Section 717.5.4.1.
2. An enclosed elevator lobby shall be provided at each floor to separate the elevator hoistway shaft enclosure doors from each floor by smoke partitions in accordance with Section 710 where the building is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. In addition, doors protecting openings in the smoke partitions shall comply with Sections 710.5.2.2, 710.5.2.3 and 716.2.6.1. Penetrations of the enclosed elevator lobby by ducts and air transfer openings shall be protected as required for corridors in accordance with Section 717.5.4.1.
3. Additional doors shall be provided at each elevator hoistway door opening in accordance with Section 3002.6. Such door shall comply with the smoke and draft control door assembly requirements in Section 716.2.2.1.1 when tested in accordance with UL 1784 without an artificial bottom seal.

4. **[SFM]** When approved, in other than Group I-2 occupancies elevator hoistway shall be pressurized in accordance with Section 909.21.
5. **[SFM]** Enclosed elevator lobbies are not required where the hoistway door has a fire-protection rating as required by Section 708.6 and the hoistway door opening is also protected by a listed and labeled smoke containment system complying with ICC ES AC 77.

**3006.4 Means of egress.** Elevator lobbies shall be provided with not less than one means of egress complying with Chapter 10 and other provisions in this code. Egress through an enclosed elevator lobby shall be permitted in accordance with Item 1 of Section 1016.2.

## 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 fire service access elevators complying with Sections 3007.1 through 3007.10 with the modifications set forth in this Code. Except as modified in this section, fire service access elevators shall be installed in accordance with this chapter and the Elevator Code.

**3007.2 Automatic sprinkler system.** The building shall be equipped throughout with an 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 3007.2.1.

**3007.2.1 Prohibited locations.** Automatic sprinklers shall not be installed in machine rooms, elevator machinery spaces, control rooms, control spaces and elevator hoistways of fire service access elevators.

**3007.2.2 Sprinkler system monitoring.** The sprinkler system shall have a sprinkler control valve supervisory switch and water-flow-initiating device provided for each floor that is monitored by the building's fire alarm system.

**3007.3 Water protection.** Water from the operation of an automatic sprinkler system outside the enclosed lobby shall be prevented from infiltrating into the hoistway enclosure in accordance with an approved method.

**3007.4 Shunt trip.** Means for elevator shutdown in accordance with Section 3005.5 shall not be installed on elevator systems used for fire service access elevators.

**3007.5 Hoistway enclosures.** The fire service access elevator hoistway shall be located in a shaft enclosure complying with Section 713.

**3007.5.1 Structural integrity of hoistway enclosures.** The fire service access elevator hoistway enclosure shall comply with Sections 403.2.2.1 through 403.2.2.4.

**3007.5.2 Hoistway lighting.** When fire-fighters' emergency operation is active, the entire height of the hoistway shall be illuminated at not less than 1 footcandle (11 lux) as measured from the top of the car of each fire service access elevator.

**3007.6 Fire service access elevator lobby.** The fire service access elevator shall open into an enclosed fire service access

elevator lobby in accordance with Sections 3007.6.1 through 3007.6.5. Egress is permitted through the enclosed elevator lobby in accordance with Item 1 of Section 1016.2.

**Exception:** Where a fire service access elevator has two entrances onto a floor, the second entrance shall be permitted to be protected in accordance with Section 3006.3.

**3007.6.1 Access to smokeproof enclosure.** The enclosed fire service access elevator lobby shall have direct access from the enclosed elevator lobby to a *smokeproof enclosure complying with Section 909.20*.

**Exception:** Access to a *smokeproof enclosure* shall be permitted to be through a protected path of travel that has a level of fire protection not less than the elevator lobby enclosure. The protected path shall be separated from the enclosed elevator lobby through an opening protected by a smoke and draft control assembly in accordance Section 716.2.2.1.

**3007.6.2 Lobby enclosure.** The fire service access elevator lobby shall be enclosed with a smoke barrier having a fire-resistance rating of not less than 1 hour, except that lobby doorways shall comply with Section 3007.6.3.

**Exception:** Enclosed fire service access elevator lobbies are not required at the levels of exit discharge.

**3007.6.3 Lobby doorways.** Other than doors to the hoistway, elevator control room or elevator control space, each doorway to an enclosed fire service access elevator lobby shall be provided with a  $\frac{3}{4}$ -hour fire door assembly complying with Section 716. The fire door assembly shall comply with the smoke and draft control door assembly requirements of Section 716.2.2.1.1 and be tested in accordance with UL 1784 without an artificial bottom seal.

**3007.6.4 Lobby size.** Regardless of the number of fire service access elevators served by the same elevator lobby, the enclosed fire service access elevator lobby shall be not less than 150 square feet (14 m<sup>2</sup>) in an area with a dimension of not less than 8 feet (2440 mm).

**3007.6.5 Fire service access elevator symbol.** A pictorial symbol of a standardized design designating which elevators are fire service access elevators shall be installed on each side of the hoistway door frame on the portion of the frame at right angles to the fire service access elevator lobby. The fire service access elevator symbol shall be designed as shown in Figure 3007.6.5 and shall comply with the following:

1. The fire service access elevator symbol shall be not less than 3 inches (76 mm) in height.
2. The helmet shall contrast with the background, with either a light helmet on a dark background or a dark helmet on a light background.
3. The vertical center line of the fire service access elevator symbol shall be centered on the hoistway door frame. Each symbol shall be not less than 78 inches

(1981 mm), and not more than 84 inches (2134 mm) above the finished floor at the threshold.



For S.I. 1 inch = 25.4 mm.

**FIGURE 3007.6.5  
FIRE SERVICE ACCESS ELEVATOR SYMBOL**

**3007.7 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.

**3007.8 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. Ventilation and cooling equipment for elevator machine rooms, control rooms, machine spaces and control spaces.
4. Elevator car lighting.

**3007.8.1 Protection of wiring or cables.** Wires or cables that are located outside of the elevator hoistway and machine room and that provide normal or 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 using one of the following methods:

1. Cables used for survivability of required critical circuits shall be listed in accordance with UL 2196 and shall have a fire-resistance rating of not less than 2 hours.
2. Electrical circuit protective systems shall have a fire-resistance rating of not less than 2 hours. Electrical circuit protective systems shall be installed in accordance with their listing requirements.
3. Construction having a fire-resistance rating of not less than 2 hours.

**Exception:** Wiring and cables to control signals are not required to be protected provided that wiring and cables do not serve Phase II emergency in-car operations.

**3007.9 Standpipe hose connection.** A Class I standpipe hose connection in accordance with Section 905 shall be provided



in the interior exit stairway and ramp having direct access from the enclosed fire service access elevator lobby.

**3007.9.1 Access.** The exit enclosure containing the stand-pipe shall have access to the floor without passing through the enclosed fire service access elevator lobby.

## 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 CBC Sections 3008.1 through 3008.10. Where other elevators are used for occupant self-evacuation, those elevators shall comply with these sections.

**3008.1.1 Occupant evacuation elevators.** Occupant evacuation elevators shall comply with the California Code of Regulations, Title 8, Division 1, Chapter 4, Subchapter 6, Elevator Safety Orders.

**3008.1.2 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 provided with occupant evacuation elevators complying with Section 3008.1.

**3008.1.3 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.

**3008.1.4 Operation.** The occupant evacuation elevators shall be used for occupant self-evacuation in accordance with the occupant evacuation operation requirements in ASME A17.1/CSA B44 and the building's fire safety and evacuation plan.

**3008.2 Automatic sprinkler system.** The building shall be equipped throughout with 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 3008.2.1.

**3008.2.1 Prohibited locations.** Automatic sprinklers shall not be installed in elevator machine rooms, machinery spaces, control rooms, control spaces and elevator hoistways of occupant evacuation elevators *in accordance with this section and Section 3005.4.1*.

**3008.2.2 Sprinkler system monitoring.** The automatic sprinkler system shall have a sprinkler control valve supervisory switch and water-flow-initiating device provided for each floor that is monitored by the building's fire alarm system.

**3008.3 Water protection.** Water from the operation of an automatic sprinkler system outside the enclosed lobby shall be prevented from infiltrating into the hoistway enclosure in accordance with an approved method.

**3008.4 Shunt trip.** Means for elevator shutdown in accordance with Section 3005.5 shall not be installed on elevator systems used for occupant evacuation elevators.

**3008.5 Hoistway enclosure protection.** Occupant evacuation elevator hoistways shall be located in shaft enclosures complying with Section 713.

### 3008.5.1 Structural integrity of hoistway enclosures.

Occupant evacuation elevator hoistway enclosures shall comply with Sections 403.2.2.1 through 403.2.2.4.

**3008.6 Occupant evacuation elevator lobby.** Occupant evacuation elevators shall open into an enclosed elevator lobby in accordance with Sections 3008.6.1 through 3008.6.6. Egress is permitted through the elevator lobby in accordance with Item 1 of Section 1016.2.

**3008.6.1 Access to interior exit stairway or ramp.** The occupant evacuation elevator lobby shall have direct access from the enclosed elevator lobby to an interior exit stairway or ramp.

#### Exceptions:

1. Access to an interior exit stairway or ramp shall be permitted to be through a protected path of travel that has a level of fire protection not less than the elevator lobby enclosure. The protected path shall be separated from the enclosed elevator lobby through an opening protected by a smoke and draft control assembly in accordance Section 716.2.2.1.
2. Elevators that only service an open parking garage and the lobby of the building shall not be required to provide direct access.

**3008.6.2 Lobby enclosure.** The occupant evacuation elevator lobby shall be enclosed with a smoke barrier having a fire-resistance rating of not less than 1 hour, except that lobby doorways shall comply with Section 3008.6.3.

**Exception:** Enclosed occupant evacuation elevator lobbies are not required at the levels of exit discharge.

**3008.6.3 Lobby doorways.** Other than the doors to the hoistway, elevator machine rooms, machinery spaces, control rooms and control spaces within the lobby enclosure smoke barrier, each doorway to an occupant evacuation elevator lobby shall be provided with a  $\frac{3}{4}$ -hour fire door assembly complying with Section 716. The fire door assembly shall comply with the smoke and draft control assembly requirements of Section 716.2.2.1.1 and be tested in accordance with UL 1784 without an artificial bottom seal.

**3008.6.3.1 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, shall comply with the requirements of Section 716 and shall be located to furnish clear vision of the occupant evacuation elevator lobby.

**3008.6.3.2 Door closing.** Each fire door assembly protecting the lobby doorway shall be automatic-clos-

ing upon receipt of any fire alarm signal from the emergency voice/alarm communication system serving the building.

**3008.6.4 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<sup>2</sup>) per person, not less than 25 percent of the occupant load of the floor area served by the lobby.
2. The occupant evacuation elevator lobby floor area shall accommodate one wheelchair space of 30 inches by 52 inches (760 mm by 1320 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.

**3008.6.5 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.

**3008.6.6 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 alternate location approved by the fire department. The two-way communication system shall be designed and installed in accordance with Sections 1009.8.1 and 1009.8.2.

**3008.7 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 machinery and electrical apparatus cooling equipment where provided, elevator machine room, control room and control space ventilation and cooling equipment.
5. Status of standby or emergency power system that provides backup power to the elevator equipment, elevator machinery and electrical cooling equipment where provided, elevator machine room, control room and control space ventilation and cooling equipment.
6. Activation of any fire alarm initiating device in any elevator lobby, elevator machine room, machine space containing a motor controller or electric driving

machine, control space, control room or elevator hoistway.

**3008.7.1 Elevator recall.** The fire command center or an alternate 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*.

**3008.8 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. Ventilation and cooling equipment for elevator machine rooms, control rooms, machinery spaces and control spaces.
3. Elevator car lighting.

**3008.8.1 Determination of standby power load.** Standby power loads shall be based on the determination of the number of occupant evacuation elevators in CBC Section 3008.1.

**3008.8.2 Protection of wiring or cables.** Wires or cables that are located outside of the elevator hoistway, machine room, control room and control space and that provide normal or standby power, control signals, communication with the car, lighting, heating, air conditioning, ventilation and fire-detecting systems to occupant evacuation elevators shall be protected using one of the following methods:

1. Cables used for survivability of required critical circuits shall be listed in accordance with UL 2196 and shall have a fire-resistance rating of not less than 2 hours.
2. Electrical circuit protective systems shall have a fire-resistance rating of not less than 2 hours. Electrical circuit protective systems shall be installed in accordance with their listing requirements.
3. Construction having a fire-resistance rating of not less than 2 hours.

**Exception:** Wiring and cables to control signals are not required to be protected provided that wiring and cables do not serve Phase II emergency in-car operation.

**3008.9 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.

**3008.9.1 Notification appliances.** Not fewer than one audible and one visible notification appliance shall be installed within each occupant evacuation elevator lobby.

**3008.10 Hazardous material areas.** Building areas shall not contain hazardous materials exceeding the maximum allowable quantities per control area as addressed in Section 414.2.

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**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 A17.1, 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.*



## 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.

**3104.1.1 Application.** Pedestrian walkways shall be designed and constructed in accordance with Sections 3104.2 through 3104.9. Tunnels shall be designed and constructed in accordance with Sections 3104.2 and 3104.10.

**3104.2 Separate structures.** Buildings connected by pedestrian walkways or tunnels shall be considered to be separate structures.

### Exceptions:

1. Buildings that are on the same lot and considered as portions of a single building in accordance with Section 503.1.2.
2. *[DSA-AC and HCD 1-AC] For purposes of accessibility in residential facilities as required by Chapters 11A and 11B, structurally connected buildings, buildings connected by stairs, walkways or roofs, and buildings with multiple wings shall be considered one structure.*

**3104.3 Construction.** The pedestrian walkway shall be of noncombustible construction.

### Exceptions:

1. Combustible construction shall be permitted where connected buildings are of combustible construction.
2. Fire-retardant-treated wood, in accordance with Section 603.1, Item 1.3, shall be permitted for the roof construction of the pedestrian walkway where connected buildings are not less than Type I or II construction.

**3104.4 Contents.** Only materials and decorations approved by the building official shall be located in the pedestrian walkway.

**3104.5 Connections of pedestrian walkways to buildings.** The connection of a pedestrian walkway to a building shall comply with Section 3104.5.1, 3104.5.2, 3104.5.3 or 3104.5.4.

**Exception:** Buildings that are on the same lot and considered as portions of a single building in accordance with Section 503.1.2.

**3104.5.1 Fire barriers.** Pedestrian walkways shall be separated from the interior of the building by not less than 2-hour fire barriers constructed in accordance with Section 707 and Sections 3104.5.1.1 through 3104.5.1.3.

**3104.5.1.1 Exterior walls.** Exterior walls of buildings connected to pedestrian walkways shall be 2-hour fire-resistance rated. This protection shall extend not less than 10 feet (3048 mm) in every direction surrounding the perimeter of the pedestrian walkway.

**3104.5.1.2 Openings in exterior walls of connected buildings.** Openings in exterior walls required to be fire-resistance rated in accordance with Section 3104.5.1.1 shall be equipped with opening protectives providing a not less than  $\frac{3}{4}$ -hour fire protection rating in accordance with Section 716.

**3104.5.1.3 Supporting construction.** The fire barrier shall be supported by construction as required by Section 707.5.1.

**3104.5.2 Alternative separation.** The wall separating the pedestrian walkway and the building shall comply with Section 3104.5.2.1 or 3104.5.2.2 where:

1. The distance between the connected buildings is more than 10 feet (3048 mm).
2. The pedestrian walkway and connected buildings are equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, and the roof of the walkway is not more than 55 feet (16 764 mm) above grade connecting to the fifth, or lower, story above grade plane, of each building.

**Exception:** Open parking garages need not be equipped with an automatic sprinkler system.

**3104.5.2.1 Passage of smoke.** The wall shall be capable of resisting the passage of smoke.

**3104.5.2.2 Glass.** The wall shall be constructed of a tempered, wired or laminated glass and doors separating the interior of the building from the pedestrian walkway. The glass shall be protected by an automatic sprinkler system in accordance with Section 903.3.1.1 that, when actuated, shall completely wet the entire surface of interior sides of the wall or glass. Obstructions shall not be installed between the sprinkler heads and the wall or glass. The glass shall be in a gasketed frame and installed in such a manner that the framing system will deflect without breaking (loading) the glass before the sprinkler operates.

**3104.5.3 Open sides on walkway.** Where the distance between the connected buildings is more than 10 feet (3048 mm), the walls at the intersection of the pedestrian walkway and each building need not be fire-resistance rated provided that both sidewalls of the pedestrian walkway are not less than 50 percent open with the open area uniformly distributed to prevent the accumulation of smoke and toxic gases. The roof of the walkway shall be located not more than 40 feet (12 160 mm) above grade plane, and the walkway shall only be permitted to connect to the third or lower story of each building.

**Exception:** Where the pedestrian walkway is protected with an automatic sprinkler system in accordance with Section 903.3.1.1, the roof of the walkway shall be located not more than 55 feet (16 764 mm) above grade plane and the walkway shall only be permitted to connect to the fifth or lower story of each building.

**3104.5.4 Exterior walls greater than 2 hours.** Where exterior walls of connected buildings are required by Section 705 to have a fire-resistance rating greater than 2 hours, the walls at the intersection of the pedestrian walk-

## SPECIAL CONSTRUCTION

way and each building need not be fire-resistance rated provided:

1. The pedestrian walkway is equipped throughout with an automatic sprinkler system installed in accordance with Section 903.3.1.1.
2. The roof of the walkway is not located more than 55 feet (16 764 mm) above grade plane and the walkway connects to the fifth, or lower, story above grade plane of each building.

**3104.6 Public way.** Pedestrian walkways over a public way shall comply with Chapter 32.

**3104.7 Egress.** Access shall be provided at all times to a pedestrian walkway that serves as a required exit.

**3104.8 Width.** The unobstructed width of pedestrian walkways shall be not less than 36 inches (914 mm). The total width shall be not greater than 30 feet (9144 mm).

**3104.9 Exit access travel.** The length of exit access travel shall be 200 feet (60 960 mm) or less.

### Exceptions:

1. Exit access travel distance on a pedestrian walkway equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 shall be 250 feet (76 200 mm) or less.
2. Exit access travel distance on a pedestrian walkway constructed with both sides not less than 50 percent open shall be 300 feet (91 440 mm) or less.
3. Exit access travel distance on a pedestrian walkway constructed with both sides not less than 50 percent open, and equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1, shall be 400 feet (122 m) or less.

**3104.10 Tunneled walkway.** Separation between the tunneled walkway and the building to which it is connected shall be not less than 2-hour fire-resistant construction and openings therein shall be protected in accordance with Section 716.

## SECTION 3105 AWNINGS AND CANOPIES

**3105.1 General.** Awnings and canopies shall comply with the requirements of Sections 3105.2 and 3105.3 and other applicable sections of this code.

**3105.2 Design and construction.** Awnings and canopies shall be designed and constructed to withstand wind or other lateral loads and live loads as required by Chapter 16 with due allowance for shape, open construction and similar features that relieve the pressures or loads. Structural members shall be protected to prevent deterioration. Awnings shall have frames of noncombustible material, fire-retardant-treated wood, heavy timber complying with Section 2304.11, or 1-hour construction with combustible or noncombustible covers and shall be either fixed, retractable, folding or collapsible.

**3105.3 Awnings and canopy materials.** Awnings and canopies shall be provided with an approved covering that complies with one of the following:

1. The fire propagation performance criteria of Test Method 1 or Test Method 2, as appropriate, of NFPA 701.
2. Has a flame spread index not greater than 25 when tested in accordance with ASTM E84 or UL 723.
3. Meets all of the following criteria when tested in accordance with NFPA 286:
  - 3.1. During the 40 kW exposure, flames shall not spread to the ceiling.
  - 3.2. Flashover, as defined in NFPA 286, shall not occur.
  - 3.3. The flame shall not spread to the outer extremity of the sample on any wall or ceiling.
  - 3.4. The peak heat release rate throughout the test shall not exceed 800 kW.

*All fabrics and all interior decorative fabrics or materials shall be flame resistant in accordance with the provisions set forth in CCR, Title 19, Division 1, Chapter 8. Tops and side-walls shall be made either from fabric that 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:** The fire propagation performance and flame spread index requirements shall not apply to awnings installed on detached one- and two-family dwellings.

## SECTION 3106 MARQUEES

**3106.1 General.** Marquees shall comply with this section and other applicable sections of this Code. The plans and specifications and the type, design, arrangement and location of every marquee shall be approved by the Board of Cultural Affairs Commissioners of the City of Los Angeles and the Board of Public Works of the City of Los Angeles prior to the issuance of a building permit.

**3106.2 Thickness.** The height or thickness of a *marquee* measured vertically from its lowest to its highest point shall be not greater than 3 feet (914 mm) where the marquee projects more than two-thirds of the distance from the lot line to the curb line, and shall be not greater than 9 feet (2743 mm) where the marquee is less than two-thirds of the distance from the lot line to the curb line.

**3106.3 Roof construction.** Where the roof or any part thereof is a skylight, the skylight shall comply with the requirements of Chapter 24. Every roof and skylight of a marquee shall be sloped to downspouts that shall conduct any drainage from the marquee in such a manner so as not to spill over the sidewalk.

**3106.4 Location prohibited.** Every marquee shall be so located as not to interfere with the operation of any exterior standpipe, and such that the marquee does not obstruct the clear passage of stairways or exit discharge from the building or the installation or maintenance of street lighting.

**3106.5 Construction.** A marquee shall be supported entirely from the building and constructed of noncombustible materi-

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als. Marquees shall be designed as required in Chapter 16. Structural members shall be protected to prevent deterioration.

### SECTION 3107 SIGNS

**3107.1 General.** Signs shall be designed, constructed and maintained in accordance with this code.

### SECTION 3108 TELECOMMUNICATION AND BROADCAST TOWERS

**3108.1 General.** Towers shall be designed and constructed in accordance with the provisions of TIA-222. For structural design purposes, telecommunication towers shall be considered to be a "Class III Structure" subject to an Importance Factor of 1.50, as set forth in Table 2-3, Importance Factors, of TIA-222. Towers shall be designed for seismic loads; exceptions related to seismic design listed in Section 2.7.3 of TIA-222 shall not apply. In Section 2.6.6.2 of TIA 222, the horizontal extent of Topographic Category 2, escarpments, shall be 16 times the height of the escarpment.

**Exception:** Single free-standing poles used to support antennas not greater than 75 feet (22.86 m), measured from the top of the pole to grade, shall not be required to be noncombustible.

**[BS] 3108.2 Location and access.** Towers shall be located such that guy wires and other accessories shall not cross or encroach on any street or other public space, or over above-ground electric utility lines, or encroach on any privately owned property without the written consent of the owner of the encroached-upon property, space or above-ground electric utility lines. Towers shall be equipped with climbing and working facilities in compliance with TIA 222. Access to the tower sites shall be limited as required by applicable OSHA, FCC and EPA regulations.

### SECTION 3109 SWIMMING POOLS, SPAS AND HOT TUBS

**3109.1 General.** The design and construction of swimming pools, spas and hot tubs shall comply with the *International Swimming Pool and Spa Code*. **[DSA-SS and DSA-SS/CC]** *Swimming pools utilized for public school purposes shall also be designed, constructed and inspected in accordance with this code.*

**3109.2 California swimming pool safety act (statewide).**

*NOTE: These regulations are subject to local government modification. You should verify the applicable local government requirements at the time of application for a building permit.*

*The following text in this section contains the statutory language in the Swimming Pool Safety Act (HS Code, §§ 115920 – 115929) that is required to be duplicated and published in California Code of Regulations, Title 24. As such, the section numbers reflect those within the Health and Safety Code.*

**115920.** *This act shall be known and may be cited as the Swimming Pool Safety Act.*

*(Added by Stats. 1996, Ch. 925, Sec. 3.5. Effective January 1, 1997.)*

**115921.** *As used in this article the following terms have the following meanings:*

(a) "Swimming pool" or "pool" means any structure intended for swimming or recreational bathing that contains water over 18 inches deep. "Swimming pool" includes in-ground and aboveground structures and includes, but is not limited to, hot tubs, spas, portable spas and nonportable wading pools.

(b) "Public swimming pool" means a swimming pool operated for the use of the general public with or without charge, or for the use of the members and guests of a private club. Public swimming pool does not include a swimming pool located on the grounds of a private single-family home.

(c) "Enclosure" means a fence, wall or other barrier that isolates a swimming pool from access to the home.

(d) "Approved safety pool cover" means a manually or power-operated safety pool cover that meets all of the performance standards of the American Society for Testing and Materials (ASTM), in compliance with standard F1346-91.

(e) "Exit alarms" means devices that make audible, continuous alarm sounds when any door or window, that permits access from the residence to the pool area that is without any intervening enclosure, is opened or is left ajar. Exit alarms may be battery operated or may be connected to the electrical wiring of the building.

(f) "ANSI/APSP performance standard" means a standard that is accredited by the American National Standards Institute (ANSI) and published by the Association of Pool and Spa Professionals (APSP).

(g) "Suction outlet" means a fitting or fixture typically located at the bottom or on the sides of a swimming pool that conducts water to a recirculating pump.

*[Amended by Stats. 2012, Ch. 679, Sec. 1. (AB 2114) Effective January 1, 2013.]*

**115922.** (a) *Except as provided in Section 115925, when a building permit is issued for the construction of a new swimming pool or spa or the remodeling of an existing swimming pool or spa at a private single-family home, the respective swimming pool or spa shall be equipped with at least two of the following seven drowning prevention safety features:*

(1) *An enclosure that meets the requirements of Section 115923 and isolates the swimming pool or spa from the private single-family home.*

(2) *Removable mesh fencing that meets American Society for Testing and Materials (ASTM) Specifications F2286 standards in conjunction with a gate that is self-closing and self-latching and can accommodate a key lockable device.*

(3) *An approved safety pool cover, as defined in subdivision (d) of Section 115921.*

(4) *Exit alarms on the private single-family home's doors that provide direct access to the swimming pool or spa. The exit alarm may cause either an alarm noise or a ver-*

bal warning, such as a repeating notification that “the door to the pool is open.”

(5) A self-closing, self-latching device with a release mechanism placed no lower than 54 inches above the floor on the private single-family home’s doors providing direct access to the swimming pool or spa.

(6) An alarm that, when placed in a swimming pool or spa, will sound upon detection of accidental or unauthorized entrance into the water. The alarm shall meet and be independently certified to the ASTM Standard F2208 “Standard Safety Specification for Residential Pool Alarms,” which includes surface motion, pressure, sonar, laser and infrared type alarms. A swimming protection alarm feature designed for individual use, including an alarm attached to a child that sounds when the child exceeds a certain distance or becomes submerged in water, is not a qualifying drowning prevention safety feature.

(7) Other means of protection, if the degree of protection afforded is equal to or greater than that afforded by any of the features set forth above and has been independently verified by an approved testing laboratory as meeting standards for those features established by the ASTM or the American Society of Mechanical Engineers (ASME).

(b) Before the issuance of a final approval for the completion of permitted construction or remodeling work, the local building code official shall inspect the drowning safety prevention features required by this section and, if no violations are found, shall give final approval.

[Amended by Stats. 2017, Ch. 670, Sec. 4. (SB 442) Effective January 1, 2018.]

**115923.** An enclosure shall have all of the following characteristics:

(a) Any access gates through the enclosure open away from the swimming pool, and are self-closing with a self-latching device placed no lower than 60 inches above the ground.

(b) A minimum height of 60 inches.

(c) A maximum vertical clearance from the ground to the bottom of the enclosure of two inches.

(d) Gaps or voids, if any, do not allow passage of a sphere equal to or greater than four inches in diameter.

(e) An outside surface free of protrusions, cavities or other physical characteristics that would serve as handholds or footholds that could enable a child below the age of five years to climb over.

(Added by Stats. 1996, Ch. 925, Sec. 3.5. Effective January 1, 1997.)

**115924.** (a) Any person entering into an agreement to build a swimming pool or spa, or to engage in permitted work on a pool or spa covered by this article, shall give the consumer notice of the requirements of this article.

(b) Pursuant to existing law, the Department of Health Services shall have available on the department’s Web site, commencing January 1, 2007, approved pool safety information available for consumers to download. Pool contractors are encouraged to share this information with consumers regarding the potential dangers a pool or spa poses to toddlers.

Additionally, pool contractors may provide the consumer with swimming pool safety materials produced from organizations such as the United States Consumer Product Safety Commission, Drowning Prevention Foundation, California Coalition for Children’s Safety & Health, Safe Kids Worldwide, Association of Pool and Spa Professionals, or the American Academy of Pediatrics.

(Amended by Stats. 2006, Ch. 478, Sec. 3. Effective January 1, 2007.)

**115925.** The requirements of this article do not apply to any of the following:

(a) Public swimming pools.

(b) Hot tubs or spas with locking safety covers that comply with the American Society for Testing and Materials (ASTM F1346).

(c) An apartment complex or any residential setting other than a single-family home.

[Amended by Stats. 2017, Ch. 670, Sec. 5. (SB 442) Effective January 1, 2018.]

**115926.** This article does not apply to any facility regulated by the State Department of Social Services even if the facility is also used as the private residence of the operator. Pool safety in those facilities shall be regulated pursuant to regulations adopted therefor by the State Department of Social Services.

(Added by Stats. 1996, Ch. 925, Sec. 3.5. Effective January 1, 1997.)

**115927.** Notwithstanding any other provision of law, this article shall not be subject to further modification or interpretation by any regulatory agency of the state, this authority being reserved exclusively to local jurisdictions, as provided for in paragraph (7) subdivision (a) of Section 115922 and subdivision (c) of Section 115925.

(Amended by Stats. 2018, Ch. 957, Sec. 13. (SB 1078) Effective January 1, 2019.)

**115928.** Whenever a building permit is issued for the construction of a new swimming pool or spa, the pool or spa shall meet all of the following requirements:

(a) (1) The suction outlets of the pool or spa for which the permit is issued shall be equipped to provide circulation throughout the pool or spa as prescribed in paragraphs (2) and (3).

(2) The swimming pool or spa shall either have at least two circulation suction outlets per pump that shall be hydraulically balanced and symmetrically plumbed through one or more “T” fittings, and that are separated by a distance of at least three feet in any dimension between the suction outlets, or be designed to use alternatives to suction outlets, including, but not limited to, skimmers or perimeter overflow systems to conduct water to the recirculation pump.

(3) The circulation system shall have the capacity to provide a complete turnover of pool water, as specified in Section 3124B of Chapter 31B of the California Building Standards Code (Title 24 of the California Code of Regulations).

(b) Suction outlets shall be covered with antientrapment grates, as specified in the ANSI/APSP-16 performance



standard or successor standard designated by the federal Consumer Product Safety Commission, that cannot be removed except with the use of tools. Slots or openings in the grates or similar protective devices shall be of a shape, area and arrangement that would prevent physical entrapment and would not pose any suction hazard to bathers.

(c) Any backup safety system that an owner of a new swimming pool or spa may choose to install in addition to the requirements set forth in subdivisions (a) and (b) shall meet the standards as published in the document, "Guidelines for Entrapment Hazards: Making Pools and Spas Safer," Publication Number 363, March 2005, United States Consumer Product Safety Commission.

[Amended by Stats. 2012, Ch. 679, Sec. 2. (AB 2114) Effective January 1, 2013.]

**115928.5.** Whenever a building permit is issued for the remodel or modification of an existing swimming pool, toddler pool or spa, the permit shall require that the suction outlet or suction outlets of the existing swimming pool, toddler pool or spa be upgraded so as to be equipped with antientrapment grates, as specified in the ANSI/APSP-16 performance standard or a successor standard designated by the federal Consumer Product Safety Commission.

[Amended by Stats. 2012, Ch. 679, Sec. 3. (AB 2114) Effective January 1, 2013.]

**115929.** (a) The Legislature encourages a private entity, in consultation with the Epidemiology and Prevention for Injury Control Branch of the department, to produce an informative brochure or booklet, for consumer use, explaining the child drowning hazards of, possible safety measures for, and appropriate drowning hazard prevention measures for, home swimming pools and spas, and to donate the document to the department.

(b) The Legislature encourages the private entity to use existing documents from the United States Consumer Product Safety Commission on pool safety.

(c) If a private entity produces the document described in subdivisions (a) and (b) and donates it to the department, the department shall review and approve the brochure or booklet.

(d) Upon approval of the document by the department, the document shall become the property of the state and a part of the public domain. The department shall place the document on its Web site in a format that is readily available for downloading and for publication. The department shall review the document in a timely and prudent fashion and shall complete the review within 18 months of receipt of the document from a private entity.

(Added by Stats. 2003, Ch. 422, Sec. 3. Effective January 1, 2004.)

**3109.3 Public swimming pools.** Public swimming pools shall be completely enclosed by a fence or screen enclosure at least five feet (1524 mm) in height. Openings in the fence or screen enclosure shall not permit the passage of a four-inch-diameter (102 mm) sphere. The fence or screen enclosure shall be equipped with self-closing and self-latching gates.

**3109.4 Residential swimming pools.** Residential swimming pools shall be completely enclosed. The fence, barrier or a screen enclosure for residential swimming pools on a lot with

one to three dwelling units shall comply with Section 3109.4.1 and CBC Sections 3109.1 and 3109.2.

**3109.4.1 Barrier height and clearances.** For residential swimming pools, the top of the barrier shall be at least 60 inches (1524 mm) above grade measured on the side of the barrier that faces away from the swimming pool. The maximum vertical clearance between grade and the bottom of the barrier shall be 2 inches (50.8 mm) measured on the side of the barrier that faces away from the swimming pool. Where the top of the pool structure is above grade, the barrier is permitted to be mounted on top of the pool structure, provided the maximum vertical clearance between the top of the pool structure and the bottom of the barrier shall be 4 inches (101.6 mm), or at grade level.

## SECTION 3110 AUTOMATIC VEHICULAR GATES

**3110.1 General.** Automatic vehicular gates shall comply with the requirements of Sections 3110.2 and 3110.3 and other applicable sections of this code.

**3110.2 Vehicular gates intended for automation.** Vehicular gates intended for automation shall be designed, constructed and installed to comply with the requirements of ASTM F2200.

**3110.3 Vehicular gate openers.** Vehicular gate openers, where provided, shall be listed in accordance with UL 325.

## SECTION 3111 SOLAR ENERGY SYSTEMS

**3111.1 General.** Solar energy systems shall comply with the requirements of this section.

**3111.1.1 Wind resistance.** Rooftop-mounted photovoltaic (PV) panel systems and solar thermal collectors shall be designed in accordance with Section 1609.

**Exception:** [DSA-SS, DSA-SS/CC, HCD-1, HCD-2] Rooftop-mounted photovoltaic (PV) panel systems and solar thermal collectors shall be designed in accordance with Section 1511.9 of this code.

**3111.1.2 Roof live load.** Roof structures that provide support for solar energy systems shall be designed in accordance with Section 1607.14.4.

**3111.2 Solar thermal systems.** Solar thermal systems shall be designed and installed in accordance with this section, the *California Plumbing Code*, the *California Mechanical Code* and the *California Fire Code*. Where light-transmitting plastic covers are used, solar thermal collectors shall be designed in accordance with Section 2606.12.

**3111.2.1 Equipment.** Solar thermal systems and components shall be listed and labeled in accordance with ICC 900/SRCC 300 and ICC 901/SRCC 100.

**3111.3 Photovoltaic solar energy systems.** Photovoltaic solar energy systems shall be designed and installed in accordance with this section, the *California Fire Code*, the *California Electrical Code* and the manufacturer's installation instructions.

**3111.3.1 Equipment.** Photovoltaic panels and modules shall be listed and labeled in accordance with UL 1703 or with both UL 61730-1 and UL 61730-2. Inverters shall be

listed and labeled in accordance with UL 1741. Systems connected to the utility grid shall use inverters listed for utility interaction.

**3111.3.2 Fire classification.** Rooftop-mounted photovoltaic (PV) panel systems shall have a fire classification in accordance with Section 1505.9. Building-integrated photovoltaic (BIPV) systems installed as roof coverings shall have a fire classification in accordance with Section 1505.8.

**3111.3.3 Building-integrated photovoltaic (BIPV) systems.** BIPV systems installed as roof coverings shall be designed and installed in accordance with Section 1507.

**3111.3.4 Access and pathways.** Roof access, pathways and spacing requirements shall be provided in accordance with Section 1205 of the *California Fire Code*.

**3111.3.5 Elevated photovoltaic (PV) support structures.** *Elevated PV support structures shall comply with either 3111.3.5.1 or 3111.3.5.2.*

**Exception:** *Elevated PV support structures that are installed over agricultural use.*

**3111.3.5.1 PV panels installed over open grid framing or noncombustible deck.** *Elevated PV support structures with PV panels installed over open grid framing or over a noncombustible deck shall have PV panels tested, listed and labeled with a fire type rating in accordance with UL 1703 or with both UL 61730-1 and UL 61730-2. Photovoltaic panels marked "not fire rated" shall not be installed on elevated PV support structures.*

**3111.3.5.2 PV panels installed over a roof assembly.** *Elevated PV support structures with a PV panel system installed over a roof assembly shall have a fire classification in accordance with Section 1505.9.*

**3111.3.6 Ground-mounted photovoltaic (PV) panel systems.** Ground-mounted photovoltaic systems shall be designed and installed in accordance with Chapter 16 and the *California Fire Code*.

**3111.3.6.1 Fire separation distances.** Ground-mounted photovoltaic systems shall be subject to the fire separation distance requirements determined by the local jurisdiction.

## SECTION 3112 PATIO COVERS

**3112.1 General.** Patio covers shall be permitted to be detached from or attached to dwelling units. Patio covers shall be used only for recreational, outdoor living purposes and not as carports, garages, storage rooms or habitable rooms.

**3112.2 Definitions.** The following word and term shall, for the purposes of Chapter 31 of this Code, have the meaning shown herein.

**PATIO COVERS.** One-story structures not exceeding 12 feet (3657 mm) in height. Enclosure walls shall be permitted to be of any configuration, provided the open or glazed area of the longer wall and one additional wall is equal to at least 65 percent of the area below a minimum of 6 feet 8 inches (2013 mm) of each wall, measured from the floor.

**3112.3 Exterior openings.**

**3112.3.1 Exterior walls.** Enclosure walls shall be permitted to be of any configuration, provided that the open or glazed

area of the longer wall and one additional wall is equal to not less than 65 percent of the area below not less than 6 feet 8 inches (2032 mm) of each wall, measured from the floor. Openings shall be permitted to be enclosed with insect screening, translucent or transparent plastic conforming to the provisions of Sections 2606 through 2610, glass conforming to the provisions of Chapter 24 or any combination of the foregoing.

**3112.3.2 Light, ventilation and emergency egress.** Exterior openings of the dwelling unit required for light and ventilation shall be permitted to open into a patio structure. However, the patio structure shall be unenclosed if such openings are serving as emergency egress or rescue openings from sleeping rooms. Where such exterior openings serve as an exit from the dwelling unit, the patio structure, unless unenclosed, shall be provided with exits conforming to the provisions of Chapter 10.

**3112.4 Structural provisions.**

**3112.4.1 Design loads.** Patio covers shall be designed and constructed to sustain, within the stress limits of this code, all dead loads plus a minimum vertical live load of 10 pounds per square foot (0.48 kN/m<sup>2</sup>) except that snow loads shall be used where such snow loads exceed this minimum. Such patio covers shall be designed to resist the minimum wind and seismic loads set forth in this code.

**3112.4.2 Footings.** In areas with a frost depth of zero, a patio cover shall be permitted to be supported on a concrete slab on grade without footings, provided that the slab conforms to the provisions of Chapter 19 of this code and is not less than 3½ inches (89 mm) thick, and the columns do not support loads in excess of 750 pounds (3.36 kN) per column.

## SECTION 3113 RELOCATABLE BUILDINGS

**3113.1 General.** The provisions of this section shall apply to relocatable buildings. Relocatable buildings manufactured after the effective date of this code shall comply with the applicable provisions of this code. *[DSA-SS and DSA-SS/CC] as enforced by the enforcement agency.*

**Exception:** This section shall not apply to manufactured housing used as dwellings.

*[HCD] The provisions of Section 3113 are not applicable to commercial modulars, manufactured homes, mobilehomes, multi-unit manufactured housing and special purpose commercial modulars as defined in Health and Safety Code Sections 18001.8, 18007, 18008, 18008.7 and 18012.5, respectively. These structures are subject to installation/reinstallation requirements specified in the Mobile-home Parks Act (Health and Safety Code Section 18200 et seq.) and the California Code of Regulations, Title 25, Division 1, Chapter 2. Manufactured homes must meet unit identification (data plate) and certification label requirements as specified in the Code of Federal Regulations, Title 24, Subtitle B, Chapter XX, Part 3280 and Health and Safety Code Section 18032. Commercial modulars and special purpose commercial modulars must meet identification*

requirements in the California Code of Regulations, Title 25, Division 1, Chapter 3, Subchapter 2.

**3113.1.1 Compliance.** A newly constructed relocatable building shall comply with the requirements of this code for new construction. *[DSA-SS and DSA-SS/CC] as enforced by the enforcement agency.* An existing relocatable building that is undergoing alteration, addition, change of occupancy or relocation shall comply with Chapter 14 of the California Existing Building Code.

*Exception: [DSA-SS and DSA-SS/CC] An existing relocatable public school building that is undergoing alteration, addition or change of occupancy shall comply with Chapter 3 of the California Existing Building Code.*

**3113.2 Supplemental information.** Supplemental information specific to a relocatable building shall be submitted to the authority having jurisdiction. It shall, as a minimum, include the following in addition to the information required by Section 105:

*Exception: [DSA-SS and DSA-SS/CC] Supplemental information specific to a relocatable building shall be submitted to the enforcement agency. It shall, as a minimum, include the following in addition to the information required by Section 1603A:*

1. Manufacturer's name and address.
2. Date of manufacture.
3. Serial number of module.
4. Manufacturer's design drawings.
5. Type of construction in accordance with Section 602.
6. Design loads including: roof live load, roof snow load, floor live load, wind load and seismic site class, use group and design category.
7. Additional building planning and structural design data.
8. Site-built structure or appurtenance attached to the relocatable building.

**3113.3 Manufacturer's data plate.** Each relocatable module shall have a data plate that is permanently attached on or adjacent to the electrical panel, and shall include the following information:

1. Occupancy group.
2. Manufacturer's name and address.
3. Date of manufacture.
4. Serial number of module.
5. Design roof live load, design floor live load, snow load, wind and seismic design.
6. Approved quality assurance agency or approved inspection agency.
7. Codes and standards of construction.
8. Envelope thermal resistance values.
9. Electrical service size.
10. Fuel-burning equipment and size.
11. Special limitations if any.

*Exception: [DSA-SS and DSA-SS/CC] Each relocatable module shall have two metal identification labels perma-*

*nently attached to the structure as enforced by the enforcement agency.*

**3113.4 Inspection agencies.** The building official is authorized to accept reports of inspections conducted by approved inspection agencies during off-site construction of the relocatable building, and to satisfy the applicable requirements of Sections 110.3 through 110.3.12.1.

*Exception: [DSA-SS and DSA-SS/CC] Each relocatable module shall be inspected during construction and installation at the project site by project inspectors acceptable to the enforcement agency in accordance with Part 1, California Administrative Code, Title 24, CCR.*

## SECTION 3114 PUBLIC USE RESTROOM BUILDINGS IN FLOOD HAZARD AREAS

**3114.1 General.** For the purpose of this section, public restroom buildings are located on publicly owned lands in flood hazard areas and intended for public use. Public restroom buildings and portions of other buildings that contain public restrooms are limited to toilet rooms, bathrooms, showers and changing rooms. Public restroom buildings and portions of buildings that contain public restrooms shall comply with the requirements of this section. Public-use restrooms that are not elevated or dry floodproofed in accordance with Section 1612 shall comply with Section 3114.2. Portions of buildings that include uses other than public-use toilet rooms, bathrooms, showers and changing rooms shall comply with Section 1612.

**3114.2 Flood resistance.** Public-use restrooms on publicly owned lands in flood hazard areas shall comply with the requirements of ASCE 24, except for elevation requirements, and shall comply with all of the following criteria:

1. The building footprint is not more than 1,500 square feet (139 m<sup>2</sup>).
2. Located, designed and constructed to resist the effects of flood hazards and flood loads to minimize flood damage from a combination of wind and water loads associated with the base flood.
3. Anchored to prevent flotation, collapse or lateral movement resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy during conditions of the base flood.
4. Constructed of flood-damage-resistant materials.
5. Where enclosed by walls, the walls have flood openings.
6. Mechanical and electrical systems are located above the base flood elevation.
7. Plumbing fixtures and plumbing connections are located above the base flood elevation.
8. An emergency plan, approved by the jurisdiction, is submitted to the building official and includes building design documents specifying implementation of protection measures prior to the onset of flooding conditions.

### Exceptions:

1. Minimum necessary electric equipment required to address health, life safety and electric code requirements is permitted below the base flood elevation in

accordance with ASCE 24 provisions for electric elements installed below the minimum elevations.

2. Plumbing fixtures and connections are permitted below the base flood elevation provided that the fixtures and connections are designed and installed to minimize or eliminate infiltration of floodwaters into the sanitary sewage system and discharges from sanitary sewage systems into floodwaters.

## SECTION 3115 INTERMODAL SHIPPING CONTAINERS

*Not permitted by OSHPD.*

**3115.1 General.** The provisions of Section 3115 and other applicable sections of this code shall apply to intermodal shipping containers that are repurposed for use as buildings or structures, or as a part of buildings or structures.

**Exceptions:** *[DSA-SS & DSA-SS/CC] Not permitted by DSA.*

1. Intermodal shipping containers previously approved as existing relocatable buildings complying with Chapter 14 of the *California Existing Building Code*.
2. Stationary storage battery arrays located in intermodal shipping containers complying with Chapter 12 of the *California Fire Code*.
3. Intermodal shipping containers that are listed as equipment complying with the standard for equipment, such as air chillers, engine generators, modular data centers, and other similar equipment.
4. Intermodal shipping containers housing or supporting experimental equipment are exempt from the requirements of Section 3115, provided that they comply with all of the following:
  - 4.1. Such units shall be single stand-alone units supported at grade level and used only for occupancies as specified under Risk Category I in Table 1604.5.
  - 4.2. Such units are located a minimum of 8 feet (2438 mm) from adjacent structures, and are not connected to a fuel gas system or fuel gas utility.
  - 4.3. In hurricane-prone regions and flood hazard areas, such units are designed in accordance with the applicable provisions of Chapter 16.
5. *[HCD] Shipping containers constructed or converted off-site that meet the definition of Factory-built Housing in Health and Safety Code Section 19971 or Commercial Modular(s) as defined in Health and Safety Code Section 18001.8 shall be approved by the Department of Housing and Community Development.*

**3115.2 Construction documents.** The construction documents shall contain information to verify the dimensions and establish the physical properties of the steel components and wood floor components of the intermodal shipping container, in addition to the information required by Sections 107 and 1603.

**3115.3 Intermodal shipping container information.** Intermodal shipping containers shall bear an existing data plate containing the following information as required by ISO 6346 and verified by an approved agency. A report of the verification process and findings shall be provided to the building owner.

1. Manufacturer's name or identification number.
2. Date manufactured.
3. Safety approval number.
4. Identification number.
5. Maximum operating gross mass or weight (kg) (lbs).
6. Allowable stacking load for 1.8G (kg) (lbs).
7. Transverse racking test force (Newtons).
8. Valid maintenance examination date.

Where approved by the building official, the markings and existing data plate are permitted to be removed from the intermodal shipping containers before they are repurposed for use as buildings or structures or as a part of buildings or structures.

**3115.4 Protection against decay and termites.** Wood structural floors of intermodal shipping containers shall be protected from decay and termites in accordance with the applicable provisions of Section 2304.12.1.1.

**3115.5 Under-floor ventilation.** The space between the bottom of the floor joists and the earth under any intermodal shipping container, except spaces occupied by basements and cellars, shall be provided with ventilation in accordance with Section 1202.4.

**3115.6 Roof assemblies.** Intermodal shipping container roof assemblies shall comply with the applicable requirements of Chapter 15.

**Exception:** Single-unit, stand-alone intermodal shipping containers not attached to, or stacked vertically over, other intermodal shipping containers, buildings or structures.  
*[DSA-SS & DSA-SS/CC] Not permitted by DSA.*

**3115.7 Joints and voids.** Joints and voids that create concealed spaces between connected or stacked intermodal shipping containers at fire-resistance-rated walls, floor or floor/ceiling assemblies and roofs or roof/ceiling assemblies shall be protected by an approved fire-resistant joint system in accordance with Section 715.

**3115.8 Structural.** Intermodal shipping containers that conform to ISO 1496-1 and are repurposed for use as buildings or structures, or as a part of buildings or structures, shall be designed in accordance with Chapter 16 and this section.

**3115.8.1 Foundations.** Intermodal shipping containers repurposed for use as a permanent building or structure shall be supported on foundations or other supporting structures designed and constructed in accordance with Chapters 16 through 23.

**3115.8.1.1 Anchorage.** Intermodal shipping containers shall be anchored to foundations or other supporting structures as necessary to provide a continuous load path for all applicable design and environmental loads in accordance with Chapter 16.

**3115.8.2 Welds.** New welds and connections shall be equal to or greater than the original connections.

**[DSA-SS & DSA-SS/CC]** The strength of new welds and connections shall be no less than the strength provided by the original connections. All new welds and connections shall be designed and constructed in accordance with Chapters 16, 17 and 22.

**3115.8.3 Structural design.** The structural design for the intermodal shipping containers repurposed for use as a building or structure, or as part of a building or structure, shall comply with Section 3115.8.4 or 3115.8.5.

**3115.8.4 Detailed design procedure.** A structural analysis meeting the requirements of this section shall be provided to the building official to demonstrate the structural adequacy of the intermodal shipping containers.

**Exception:** Intermodal shipping containers designed in accordance with Section 3115.8.5.

**3115.8.4.1 Material properties.** Structural material properties for existing intermodal shipping container steel components shall be established by material testing where the steel grade and composition cannot be identified by the manufacturer's designation as to manufacture and mill test. **[DSA-SS & DSA-SS/CC]** Not permitted by DSA.

**3115.8.4.2 Seismic design parameters.** The seismic force-resisting system shall be designed and detailed in accordance with **[DSA-SS & DSA-SS/CC]** ASCE 7 and one of the following:

1. Where all or portions of the corrugated steel container sides are considered to be the seismic force-resisting system, design and detailing shall be in accordance with the ASCE 7, Table 12.2-1 requirements for light-frame bearing-wall systems with shear panels of all other materials. **[DSA-SS & DSA-SS/CC]** Not permitted by DSA.
2. Where portions of the corrugated steel container sides are retained, but are not considered to be the seismic force-resisting system, an independent seismic force-resisting system shall be selected, designed and detailed in accordance with ASCE 7, Table 12.2-1.
3. Where portions of the corrugated steel container sides are retained and integrated into a seismic force-resisting system other than as permitted by Item 1, seismic design parameters shall be developed from testing and analysis in accordance with Section 104.11 and ASCE 7, Section 12.2.1.1 or 12.2.1.2.

**3115.8.4.3 Allowable shear value.** The allowable shear values for the intermodal shipping container corrugated steel sheet panel side walls and end walls shall be demonstrated by testing and analysis in accordance with Section 104.11. Where penetrations are made in the side walls or end walls designated as part of the lateral force-resisting system, the penetrations shall be substantiated by rational analysis.

**3115.8.5 Simplified structural design of single-unit containers.** Single-unit intermodal shipping containers conforming to the limitations of Section 3115.8.5.1 shall be permitted to be designed in accordance with the simplified

structural design provisions of Section 3115.8.5.2. **[DSA-SS and DSA-SS/CC]** Not permitted by DSA.

**3115.8.5.1 Limitations.** The use of Section 3115.8.5 is subject to the following limitations:

1. The intermodal shipping container shall be a single-unit, stand-alone unit supported on a foundation and shall not be in contact with or supporting any other shipping container or other structure.
2. The intermodal shipping container top and bottom rails, corner castings, and columns or any portion thereof shall not be notched, cut, or removed in any manner.
3. The intermodal shipping container shall be erected in a level and horizontal position with the floor located at the bottom.
4. The intermodal shipping container shall be located in Seismic Design Category A, B, C or D.

**3115.8.5.2 Simplified structural design.** Where permitted by Section 3115.8.5.1, single-unit, stand-alone intermodal shipping containers shall be designed using the following assumptions for the corrugated steel shear walls:

1. The appropriate detailing requirements contained in Chapters 16 through 23.
2. Response modification coefficient,  $R = 2$ .
3. Overstrength factor,  $\Omega_0 = 2.5$ .
4. Deflection amplification factor,  $C_d = 2$ .
5. Limits on structural height,  $h_n = 9.5$  feet (2900 mm).

**3115.8.5.3 Allowable shear.** The allowable shear for the corrugated steel side walls (longitudinal) and end walls (transverse) for wind design and seismic design using the coefficients of Section 3115.8.5.2 shall be in accordance with Table 3115.8.5.3, provided that all of the following conditions are met:

1. The total linear length of all openings in any individual side wall or end wall shall be limited to not more than 50 percent of the length of that side wall or end wall, as shown in Figure 3115.8.5.3(1).
2. Any full-height wall length, or portion thereof, less than 4 feet (305 mm) shall not be considered as a portion of the lateral force-resisting system, as shown in Figure 3115.8.5.3(2).
3. All side walls or end walls used as part of the lateral force-resisting system shall have an existing or new boundary element on all sides to form a continuous load path, or paths, with adequate strength and stiffness to transfer all forces from the point of application to the final point of resistance, as shown in Figure 3115.8.5.3(3).
4. Where openings are made in container walls, floors or roofs, for doors, windows and other openings:
  - 4.1 The openings shall be framed with steel elements that are designed in accordance with Chapters 16 and 22.
  - 4.2 The cross section and material grade of any new steel element shall be equal to or greater than the steel element removed.

## SPECIAL CONSTRUCTION

5. A maximum of one penetration not greater than 6 inches (152 mm) in diameter for conduits, pipes, tubes or vents, or not greater than 16 square inches (10 323 mm<sup>2</sup>) for electrical boxes, is permitted for each individual 8-foot (2438 mm) length of lateral force-resisting wall. Penetrations located in walls that are not part of the lateral force-resisting system shall not be limited in size or quantity. Existing intermodal shipping container vents shall not be considered a penetration, as shown in Figure 3115.8.5.3(4).
6. End wall doors designated as part of the lateral force-resisting system shall be welded closed.

### 3115.9 Additional requirements. [DSA-SS and DSA-SS/CC]

#### 3115.9.1 General.

1. Intermodal shipping containers shall not have been manufactured earlier than 24 months from the date of DSA approval of the site-specific or stockpile building design drawings.
2. Intermodal shipping containers shall be undamaged and have no previous repairs. The acceptable tolerances shall not exceed those given in the ANSI/AISC 303—16: Code of Standard Practice for Steel Buildings and Bridges.
3. Intermodal shipping container type shall be standard dry cargo container, used for the transportation of dry goods only. Containers shall not have been used for transporting hazardous materials. Containers shall not have been painted with paint containing lead.
4. All structural elements and details shall be justified through engineering calculations in accordance with the California Administrative Code (Title 24, Part 1, CCR) Section 4-317(d).

**3115.9.2 Structural integrity verification.** Each intermodal shipping container shall have selection, structural integrity verification, general condition assessment, inspection and testing as enforced by the enforcement agency.

#### 3115.9.3 Seismic design requirements.

1. The container steel frame contribution to the lateral force resistance shall be neglected even in cases where the container siding is removed.
2. Deformation compatibility of structural elements that are not included in the seismic force-resisting system shall be considered in the analysis and when evaluating stiffness irregularities.
3. The total length of siding (less openings) along a line in a lower story shall not be less than 80 percent of the total length of siding (less openings) along the same line in the story immediately above.

**TABLE 3115.8.5.3  
ALLOWABLE SHEAR VALUES FOR INTERMODAL  
SHIPPING CONTAINER CORRUGATED STEEL WALLS FOR WIND OR SEISMIC LOADING**

CONTAINER DESIGNATION <sup>b</sup>	CONTAINER DIMENSION (nominal length)	CONTAINER DIMENSION (nominal height)	ALLOWABLE SHEAR VALUES (PLF) <sup>a, c</sup>	
			Side Wall	End Wall
1EEE	45 feet	9.5 feet	75	843
1EE		8.5 feet		
1AAA	40 feet	9.5 feet	84	
1AA		8.5 feet		
1A		8.0 feet		
1AX		< 8.0 feet		
1BBB	30 feet	9.5 feet	112	
1BB		8.5 feet		
1B		8.0 feet		
1BX		< 8.0 feet		
1CC	20 feet	8.5 feet	168	
1C		8.0 feet		
1CX		< 8.0 feet		
1D	10 feet	8.0 feet	337	
1DX		< 8.0 feet		

For SI: 1 foot = 304.8 mm.

a. The allowable strength shear for the side walls and end walls of the intermodal shipping containers are derived from ISO 1496-1 and reduced by a factor of safety of 5.

b. Container designation type is derived from ISO 668.

c. Limitations of Section 3115.8.5.1 shall apply.

## CHAPTER 32

# ENCROACHMENTS INTO THE PUBLIC RIGHT-OF-WAY

### User note:

*About this chapter:* From time to time it is necessary or appropriate for a portion of a building to encroach onto an adjoining public right-of-way. Chapter 32 establishes parameters for such encroachments not only at grade but also above and below grade.

### SECTION 3201 GENERAL

**3201.1 Scope.** The provisions of this Chapter shall govern the encroachment of structures into the public right-of-way.

No portion of any projection from any building over any roadway shall be lower than an elevation of 14 feet (4267.2 mm) above the roadway surface.

**3201.2 Measurement.** The projection of any structure or portion thereof shall be the distance measured horizontally from the *lot line* to the outermost point of the projection.

**3201.3 Other laws.** The provisions of this Chapter shall not be construed to permit the violation of other laws or ordinances regulating the use and occupancy of public property.

Projections into the public right-of-way shall require the approval of the Department of Public Works.

**3201.4 Drainage.** Drainage water collected from a roof, awning, canopy or marquee, and condensate from mechanical equipment shall not flow over a public walking surface.

### SECTION 3202 ENCROACHMENTS

**3202.1 Encroachments below grade.** Encroachments below grade shall comply with Sections 3202.1.1 through 3202.1.3.

**3202.1.1 Structural support.** A part of a building erected below grade that is necessary for structural support of the building or structure shall not project beyond the lot lines, except that the footings of street walls or their supports that are located not less than 8 feet (2438 mm) below grade shall not project more than 12 inches (305 mm) beyond the street lot line.

**3202.1.2 Vaults and other enclosed spaces.** The construction and utilization of vaults and other enclosed spaces below grade shall be subject to the terms and conditions of the applicable governing authority.

**3202.1.3 Areaways.** Areaways shall be protected by grates, guards or other approved means.

**3202.2 Encroachments above grade and below 8 feet in height.** Encroachments into the public right-of-way above grade and below 8 feet (2438 mm) in height shall be prohibited except as provided for in Sections 3202.2.1 through 3202.2.3. Doors and windows shall not open or project into the public right-of-way.

**3202.2.1 Steps.** Steps shall not project more than 12 inches (305 mm) and shall be guarded by approved devices not less than 3 feet (914 mm) in height, or shall be located between columns or pilasters.

**3202.2.2 Architectural features.** Columns or pilasters, including bases and moldings, shall not project more than 12 inches (305 mm). Belt courses, lintels, sills, architraves, pediments and similar architectural features shall not project more than 4 inches (102 mm).

**3202.2.3 Awnings.** The vertical clearance from the public right-of-way to the lowest part of any awning, including valances, shall be not less than 7 feet (2134 mm).

**3202.3 Encroachments 8 feet or more above grade.** Encroachments 8 feet (2438 mm) or more above grade shall comply with Sections 3202.3.1 through 3202.3.4.

**3202.3.1 Awnings, canopies, marquees and signs.** Awnings, canopies, marquees and signs shall be constructed so as to support applicable loads as specified in Chapter 16 of this Code. Awnings, canopies, marquees and signs with less than 15 feet (4572 mm) clearance above the sidewalk shall not extend into or occupy more than  $\frac{2}{3}$  the width of the sidewalk measured from the building. Stanchions or columns that support awnings, canopies, marquees and signs shall be located not less than 2 feet (609.6 mm) in from the curb line.

Prior to issuance of a building permit, plans and specifications and the type, design, arrangement and location of every marquee shall be approved by the Board of Cultural Affairs Commissioners of the City and the Board of Public Works.

**3202.3.2 Windows, balconies, architectural features and mechanical equipment.** Where the vertical clearance above grade to projecting windows, balconies, architectural features or mechanical equipment is more than 8 feet (2438 mm), 1 inch (25 mm) of encroachment is permitted for each additional 1 inch (25 mm) of clearance above 8 feet (2438 mm), but the maximum encroachment shall be 4 feet (1219 mm).

**3202.3.3 Encroachments 15 feet or more above grade.** Encroachments 15 feet (4572 mm) or more above grade shall not be limited.

**3202.3.4 Pedestrian walkways.** The installation of a pedestrian walkway over a public right-of-way shall be subject to the approval of the applicable governing authority. The vertical clearance from the public right-of-way to

the lowest part of a pedestrian walkway shall be not less than 15 feet (4572 mm).

**3202.4 Temporary encroachments.** Where allowed by the applicable governing authority, vestibules and storm enclosures shall not be erected for a period of time exceeding 7 months in any 1 year and shall not encroach more than 3 feet (914 mm) nor more than one-fourth of the width of the sidewalk beyond the street lot line. Temporary entrance awnings shall be erected with a clearance of not less than 7 feet (2134 mm) to the lowest portion of the hood or awning where supported on removable steel or other approved noncombustible support.



## CHAPTER 33

# SAFEGUARDS DURING CONSTRUCTION

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### User notes:

**About this chapter:** While the balance of the chapters in this code specify how a building is to be designed and constructed in order to be in compliance with the code, Chapter 33 looks to the actual construction process. Parameters are provided for demolition and for protecting adjacent property during demolition and construction. This chapter also addresses the need for a fire watch during nonworking hours for certain buildings once the construction has progressed significantly. Issues such as how to provide egress while the building is growing, the timing of standpipe and sprinkler installation, and protection of pedestrians are addressed.

**Code development reminder:** Code change proposals to sections preceded by the designation [BS] will be considered by the IBC—Structural Code Development Committee during the 2022 (Group B) Code Development Cycle.

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### SECTION 3301 GENERAL

**3301.1 Scope.** The provisions of this Chapter shall govern safety during construction and the protection of adjacent public and private properties.

This section shall not be construed to waive the requirements of the General Safety Orders of the Department of Industrial Relations of the State of California, or the provisions of California Civil Code Section 832 concerning the rights of coterminous owners as to excavations.

See Chapter 70 of this Code for all grading, excavation and fill requirements.

**3301.2 Storage and placement.** Construction equipment and materials shall be stored and placed so as not to endanger the public, the workers or adjoining property for the duration of the construction project.

**[BS] 3301.2.1 Structural and construction loads.** Structural roof components shall be capable of supporting the roof-covering system and the material and equipment loads that will be encountered during installation of the system.

### SECTION 3302 CONSTRUCTION SAFEGUARDS

**3302.1 Alterations, repairs and additions.** Required *exits*, existing structural elements, fire protection devices and sanitary safeguards shall be maintained at all times during alterations, repairs or additions to any building or structure.

#### Exceptions:

1. Where such required elements or devices are being altered or repaired, adequate substitute provisions shall be made.
2. Maintenance of such elements and devices is not required where the existing building is not occupied.

**3302.2 Manner of removal.** Waste materials shall be removed in a manner that prevents injury or damage to persons, adjoining properties and public rights-of-way.

**3302.3 Fire safety during construction.** Fire safety during construction shall comply with the applicable requirements of this code and the applicable provisions of Chapter 33 of the *California Fire Code*.

### SECTION 3303 DEMOLITION

**3303.1 Construction documents.** Construction documents and a schedule for demolition shall be submitted where required by the building official. Where such information is required, work shall not be done until such construction documents or schedule, or both, are approved.

**3303.2 Pedestrian protection.** The work of demolishing any building shall not be commenced until pedestrian protection is in place as required by this chapter.

**3303.3 Means of egress.** A horizontal exit shall not be destroyed unless and until a substitute means of egress has been provided and approved.

**3303.4 Vacant lot.** Where a structure has been demolished or removed, the vacant lot shall be filled and maintained to the existing grade or in accordance with the ordinances of the jurisdiction having authority.

**3303.5 Water accumulation.** Provision shall be made to prevent the accumulation of water or damage to any foundations on the premises or the adjoining property.

**3303.6 Utility connections.** Service utility connections shall be discontinued and capped in accordance with the approved rules and the requirements of the applicable governing authority.

**3303.7 Fire safety during demolition.** Fire safety during demolition shall comply with the applicable requirements of this code and the applicable provisions of Chapter 33 of the *California Fire Code*.

## SECTION 3304 SITE WORK

**3304.1 Excavation and fill.** Excavation and fill for buildings and structures shall be constructed or protected so as not to endanger life or property. Stumps and roots shall be removed from the soil to a depth of not less than 12 inches (305 mm) below the surface of the ground in the area to be occupied by the building. Wood forms that have been used in placing concrete, if within the ground or between foundation sills and the ground, shall be removed before a building is occupied or used for any purpose. Before completion, loose or casual wood shall be removed from direct contact with the ground under the building.

**3304.1.1 Slope limits.** Slopes for permanent fill shall be not steeper than one unit vertical in two units horizontal (50-percent slope). Cut slopes for permanent excavations shall be not steeper than one unit vertical in two units horizontal (50-percent slope). Deviation from the foregoing limitations for cut slopes shall be permitted only upon the presentation of a soil investigation report acceptable to the building official.

**3304.1.2 Surcharge.** Fill or other surcharge loads shall not be placed adjacent to any building or structure unless such building or structure is capable of withstanding the additional loads caused by the fill or surcharge. Existing footings or foundations that can be affected by any excavation shall be underpinned adequately or otherwise protected against settlement and shall be protected against lateral movement.

**3304.1.3 Footings on adjacent slopes.** For footings on adjacent slopes, see Chapter 18.

**3304.1.4 Fill supporting foundations.** Fill to be used to support the foundations of any building or structure shall comply with CBC Section 1804.6 and Chapter 70 of the LABC. Special inspections of compacted fill shall be in accordance with Section 1705.6.

**3304.1.5 [HCD 1] Storm water drainage and retention during construction.** *Projects which disturb less than one acre of soil and are not part of a larger common plan of development which in total disturbs one acre or more, shall manage storm water drainage during construction in accordance with the California Green Building Standards Code (CALGreen), Chapter 4, Division 4.1.*

## SECTION 3305 TOILET FACILITIES DURING CONSTRUCTION

**3305.1 Toilet facilities required.** No person shall commence or proceed with the erection, construction, alteration, repair, raising, adding to, removal or demolition of any building or structure unless adequate, suitable, sanitary toilet facilities under the control of that person are provided for the use of any person employed or working upon the building or structure. The toilet facilities shall be located upon or within a reasonable distance of the lot, premises, or site upon which the work is being done. In no case shall the line of travel to any toilet facility exceed 500 feet (152.4 m).

**3305.2 Toilet standards.** Every toilet shall be of the water-flush type and connected to a public sewer or a private sewage disposal system built in accordance with the provisions of the Plumbing Code. All toilet structures shall be completely enclosed on four sides and the top, and the door shall be self-closing; the toilet floor shall be smooth, and screened ventilation shall be provided for the toilet compartment. Where workers are employed during the night hours, the toilet building shall be provided with artificial light. In lieu of flush water closets, approved chemical toilets, which meet the requirements of Chapter III of the LAMC, may be provided.

## SECTION 3306 PROTECTION OF PEDESTRIANS

**3306.1 Protection required.** Pedestrians shall be protected during construction, remodeling and demolition activities as required by this chapter and Table 3306.1. Signs shall be provided to direct pedestrian traffic.

Nothing contained in this section shall be construed to grant permission to use, construct or place a canopy over any street or public place without first obtaining the necessary permits from the Department of Public Works.

**[BS] 3306.2 Walkways.** A walkway shall be provided for pedestrian travel in front of every construction and demolition site unless the applicable governing authority authorizes the sidewalk to be fenced or closed. A walkway shall be provided for pedestrian travel that leads from a building entrance or exit of an occupied structure to a public way. Walkways shall be of sufficient width to accommodate the pedestrian traffic, but shall be not less than 4 feet (1219 mm) in width. Walkways shall be provided with a durable walking surface. Walkways shall be accessible in accordance with

TABLE 3306.1  
PROTECTION OF PEDESTRIANS

HEIGHT OF CONSTRUCTION	DISTANCE FROM CONSTRUCTION TO LOT LINE	TYPE OF PROTECTION REQUIRED
8 feet or less	Less than 5 feet	Construction railings
	5 feet or more	None
More than 8 feet	Less than 5 feet	Barrier and covered walkway
	5 feet or more, but not more than one-fourth the height of construction	Barrier and covered walkway
	5 feet or more, but between one-fourth and one-half the height of construction	Barrier
	5 feet or more, but exceeding one-half the height of construction	None

For SI: 1 foot = 304.8 mm.

Chapter 11A or 11B as applicable, and shall be designed to support all imposed loads, and the design live load shall be not less than 150 pounds per square foot (psf) (7.2 kN/m<sup>2</sup>).

**[BS] 3306.3 Directional barricades.** Pedestrian traffic shall be protected by a directional barricade where the walkway extends into the street. The directional barricade shall be of sufficient size and construction to direct vehicular traffic away from the pedestrian path.

**[BS] 3306.4 Construction railings.** Construction railings shall be not less than 42 inches (1067 mm) in height and shall be sufficient to direct pedestrians around construction areas.

**[BS] 3306.5 Barriers.** Barriers shall be not less than 8 feet (2438 mm) in height and shall be placed on the side of the walkway nearest the construction. Barriers shall extend the entire length of the construction site. Openings in such barriers shall be protected by doors that are normally kept closed.

**[BS] 3306.6 Barrier design.** Barriers shall be designed to resist loads required in Chapter 16 unless constructed as follows:

1. Barriers shall be provided with 2-inch by 4-inch (51 mm by 102 mm) top and bottom plates.
2. The barrier material shall be boards not less than  $\frac{3}{4}$ -inch (19.1 mm) thick or wood structural panels not less than  $\frac{1}{4}$ -inch (6.4 mm) thick.
3. Wood structural use panels shall be bonded with an adhesive identical to that for exterior wood structural use panels.
4. Wood structural use panels  $\frac{1}{4}$  inch (6.4 mm) or  $\frac{5}{16}$  inch (23.8 mm) in thickness shall have studs spaced not more than 2 feet (610 mm) on center.
5. Wood structural use panels  $\frac{3}{8}$  inch (9.5 mm) or  $\frac{1}{2}$  inch (12.7 mm) in thickness shall have studs spaced not more than 4 feet (1219 mm) on center provided that a 2-inch by 4-inch (51 mm by 102 mm) stiffener is placed horizontally at mid-height where the stud spacing is greater than 2 feet (610 mm) on center.
6. Wood structural use panels  $\frac{5}{8}$  inch (15.9 mm) or thicker shall not span over 8 feet (2438 mm).

**[BS] 3306.7 Covered walkways.** Covered walkways shall have a clear height of not less than 8 feet (2438 mm) as measured from the floor surface to the canopy overhead. Adequate lighting shall be provided at all times. Covered walkways shall be designed to support all imposed loads. The design live load shall be not less than 150 psf (7.2 kN/m<sup>2</sup>) for the entire structure.

**Exception:** Roofs and supporting structures of covered walkways for new, light-frame construction not exceeding two stories above grade plane are permitted to be designed for a live load of 75 psf (3.6kN/m<sup>2</sup>) or the loads imposed on them, whichever is greater. In lieu of such designs, the roof and supporting structure of a covered walkway are permitted to be constructed as follows:

1. Footings shall be continuous 2-inch by 6-inch (51 mm by 152 mm) members.

2. Posts not less than 4 inches by 6 inches (102 mm by 152 mm) shall be provided on both sides of the roof and spaced not more than 12 feet (3658 mm) on center.
3. Stringers not less than 4 inches by 12 inches (102 mm by 305 mm) shall be placed on edge upon the posts.
4. Joists resting on the stringers shall be not less than 2 inches by 8 inches (51 mm by 203 mm) and shall be spaced not more than 2 feet (610 mm) on center.
5. The deck shall be planks not less than 2 inches (51 mm) thick or wood structural panels with an exterior exposure durability classification not less than  $\frac{23}{32}$  inch (18.3 mm) thick nailed to the joists.
6. Each post shall be knee braced to joists and stringers by members not less than 2 inches by 4 inches (51 mm by 102 mm); 4 feet (1219 mm) in length.
7. A curb that is not less than 2 inches by 4 inches (51 mm by 102 mm) shall be set on edge along the outside edge of the deck.

**[BS] 3306.8 Repair, maintenance and removal.** Pedestrian protection required by this chapter shall be maintained in place and kept in good order for the entire length of time pedestrians are subject to being endangered. The owner or the owner's authorized agent, on completion of the construction activity, shall immediately remove walkways, debris and other obstructions and leave such public property in as good a condition as it was before such work was commenced.

**[BS] 3306.9 Adjacent to excavations.** Every excavation on a site located 5 feet (1524 mm) or less from the street lot line shall be enclosed with a barrier not less than 6 feet (1829 mm) in height. Where located more than 5 feet (1524 mm) from the street lot line, a barrier shall be erected where required by the building official. Barriers shall be of adequate strength to resist wind pressure as specified in Chapter 16.

## SECTION 3307 PROTECTION OF ADJOINING PROPERTY

**3307.1 Protection required.** Adjoining public and private property shall be protected from damage during construction, remodeling and demolition work. Protection must be provided for footings, foundations, party walls, chimneys, skylights and roofs. Provisions shall be made to control water runoff and erosion during construction or demolition activities.

For excavations, adjacent property shall be protected as set forth in Section 832 of the Civil Code of California.

Prior to the issuance of any permit, which authorizes an excavation where the excavation is to be of a greater depth than are the walls or foundation of any adjoining building or structure and located closer to the property line than the depth of the excavation, the owner of the site shall provide the Department with evidence that the adjacent property owner or owners have been given a 30 day written notice of the intent to excavate. This notice shall state the depth to which the excavation is intended to be made and when the excava-

tion will commence. This notice shall be by certified mail, return receipt requested.

### 3307.2 Underpinning.

**3307.2.1 General.** In constructing underpinning, all portions of the structure shall be supported so that no structural material is stressed beyond the yield point.

**3307.2.2 Closure.** All spaces between the existing footing and the underpinning shall be packed full of mortar conforming to the provisions of Section 2103 and having no slump when tested by the method specified in ASTM C143.

### 3307.3 Temporary excavations and shoring.

**3307.3.1 General.** Excavations shall not remove the lateral support from a public way, from an adjacent property or from an existing structure. For the purpose of this section, the lateral support shall be considered to have been removed when anyone of the following conditions exist:

1. The excavation exposes any adverse geological formations, which would affect the lateral support of a public way, an adjacent property or an adjacent structure.
2. The excavation extends below a plane extending downward at an angle of 45 degrees from the edge of the public way or an adjacent property.

**Exception:** Normal footing excavations not exceeding two feet in depth will not be construed as removing lateral support.

3. The excavation extends below a plane extending downward at an angle of 45 degrees from the bottom of a footing of an existing structure.

**3307.3.2 Removal of lateral support.** Approval of the Department of Public Works shall be obtained prior to the issuance of a permit for any excavation that would remove the lateral support from a public way.

The slopes of excavations adjacent to an existing structure, an adjacent property or public way may exceed 1 horizontal to 1 vertical where either:

1. A soil report recommending that the slope may be in excess of one to one has been approved by the Department and the Department of Public Works when the excavation is adjacent to a public way.

When justified by the soils engineer, the Department may approve the use of the proposed building and/or shoring to support an adjacent structure on an adjoining property in lieu of underpinning, provided:

- (i) Evidence is submitted that the adjoining property owner has been notified in advance of the proposed excavation in compliance with California Civil Code Section 832.
- (ii) The owner of the site records a sworn affidavit with the Office of the County Recorder, which will inform future owners of the site that the lateral support of a portion of the building footings on the adjoining property is provided

by the subterranean walls of the building on the site.

2. Underpinning is designed to support adjacent structures, temporary shoring is designed to support the excavation, and plans are approved and permits are issued by the Department.

Temporary shoring shall be designed for an earth pressure recommended by a soils engineer and approved by the Department, equivalent to that exerted by a fluid weighing not less than 24 pounds (11 kg) per cubic foot plus all surcharge loads.

Soils bearing values shall be those specified in Chapter 18 of this Code or those recommended by a soils engineer and approved by the Department.

The design of the required temporary shoring and necessary underpinning shall include a sequence of construction and installation.

Allowable stresses used in the design of temporary shoring may be increased 33 $\frac{1}{3}$  percent for structural and reinforcing steel and 25 percent for wood. No increase will be permitted for concrete. Other values shall be those prescribed by this Code.

## SECTION 3308 TEMPORARY USE OF STREETS, ALLEYS AND PUBLIC PROPERTY

**3308.1 Storage and handling of materials.** The temporary use of streets or public property for the storage or handling of materials or of equipment required for construction or demolition, and the protection provided to the public shall comply with the provisions of the applicable governing authority and this chapter.

**3308.1.1 Obstructions.** Construction materials and equipment shall not be placed or stored so as to obstruct access to fire hydrants, standpipes, fire or police alarm boxes, catch basins or manholes, nor shall such material or equipment be located within 20 feet (6096 mm) of a street intersection, or placed so as to obstruct normal observations of traffic signals or to hinder the use of public transit loading platforms.

**3308.2 Utility fixtures.** Building materials, fences, sheds or any obstruction of any kind shall not be placed so as to obstruct free approach to any fire hydrant, fire department connection, utility pole, manhole, fire alarm box or catch basin, or so as to interfere with the passage of water in the gutter. Protection against damage shall be provided to such utility fixtures during the progress of the work, but sight of them shall not be obstructed.

## SECTION 3309 FIRE EXTINGUISHERS

**[F] 3309.1 Where required.** Structures under construction, alteration or demolition shall be provided with not fewer than one approved portable fire extinguisher in accordance with

Section 906 and sized for not less than ordinary hazard as follows:

1. At each stairway on all floor levels where combustible materials have accumulated.
2. In every storage and construction shed.
3. Additional portable fire extinguishers shall be provided where special hazards exist, such as the storage and use of flammable and combustible liquids.

**[F] 3309.2 Fire hazards.** The provisions of this code and the *California Fire Code* shall be strictly observed to safeguard against all fire hazards attendant upon construction operations.

### SECTION 3310 MEANS OF EGRESS

**3310.1 Stairways required.** Where building construction exceeds 40 feet (12 192 mm) in height above the lowest level of fire department vehicle access, a temporary or permanent stairway shall be provided. As construction progresses, such stairway shall be extended to within one floor of the highest point of construction having secured decking or flooring.

**[F] 3310.2 Maintenance of means of egress.** Means of egress and required accessible means of egress shall be maintained at all times during construction, demolition, remodeling or alterations and additions to any building.

**Exception:** Existing means of egress need not be maintained where approved temporary means of egress systems and facilities are provided.

### SECTION 3311 STANDPIPES

**[F] 3311.1 Where required.** In buildings required to have standpipes by Section 905.3.1, not fewer than one standpipe shall be provided for use during construction. Such standpipes shall be installed prior to construction exceeding 40 feet (12 192 mm) in height above the lowest level of fire department vehicle access. Such standpipes shall be provided with fire department hose connections at locations adjacent to *stairways* complying with Section 3310.1. As construction progresses, such standpipes shall be extended to within one floor of the highest point of construction having secured decking or flooring.

**[F] 3311.2 Buildings being demolished.** Where a building is being demolished and a standpipe exists within such a building, such standpipe shall be maintained in an operable condition so as to be available for use by the fire department. Such standpipe shall be demolished with the building but shall not be demolished more than one floor below the floor being demolished.

**[F] 3311.3 Detailed requirements.** Standpipes shall be installed in accordance with the provisions of Chapter 9.

**Exception:** Standpipes shall be either temporary or permanent in nature, and with or without a water supply,

provided that such standpipes conform to the requirements of Section 905 as to capacity, outlets and materials.

### SECTION 3312 AUTOMATIC SPRINKLER SYSTEM

**[F] 3312.1 Completion before occupancy.** In buildings where an automatic sprinkler system is required by this code, it shall be unlawful to occupy any portion of a building or structure until the automatic sprinkler system installation has been tested and approved, except as provided in Section 111.3.

**[F] 3312.2 Operation of valves.** Operation of sprinkler control valves shall be permitted only by properly authorized personnel and shall be accompanied by notification of duly designated parties. When the sprinkler protection is being regularly turned off and on to facilitate connection of newly completed segments, the sprinkler control valves shall be checked at the end of each work period to ascertain that protection is in service.

### SECTION 3313 WATER SUPPLY FOR FIRE PROTECTION

**[F] 3313.1 Where required.** An approved water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible building materials arrive on the site, on commencement of vertical combustible construction, and on installation of a standpipe system in buildings under construction, in accordance with Sections 3313.2 through 3313.5.

**Exception:** The fire code official is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

**[F] 3313.2 Combustible building materials.** When combustible building materials of the building under construction are delivered to a site, a minimum fire flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used to provide this fire flow supply shall be within 500 feet (152 m) of the combustible building materials, as measured along an approved fire apparatus access lane. Where the site configuration is such that one fire hydrant cannot be located within 500 feet (152 m) of all combustible building materials, additional fire hydrants shall be required to provide coverage in accordance with this section.

**[F] 3313.3 Vertical construction of Types III, IV and V construction.** Prior to commencement of vertical construction of Type III, IV or V buildings that utilize any combustible building materials, the fire flow required by Sections 3313.3.1 through 3313.3.3 shall be provided, accompanied by fire hydrants in sufficient quantity to deliver the required fire flow and proper coverage.

**[F] 3313.3.1 Fire separation up to 30 feet.** Where a building of Type III, IV or V construction has a fire separation distance of less than 30 feet (9144 mm) from property lot lines, and an adjacent property has an existing structure or otherwise can be built on, the water supply

shall provide either a minimum of 500 gallons per minute (1893 L/m), or the entire fire flow required for the building when constructed, whichever is greater.

**[F] 3313.3.2 Fire separation of 30 feet up to 60 feet.**

Where a building of Type III, IV or V construction has a fire separation distance of 30 feet (9144 mm) up to 60 feet (18 288 mm) from property lot lines, and an adjacent property has an existing structure or otherwise can be built on, the water supply shall provide a minimum of 500 gallons per minute (1893 L/m), or 50 percent of the fire flow required for the building when constructed, whichever is greater.

**[F] 3313.3.3 Fire separation of 60 feet or greater.**

Where a building of Type III, IV or V construction has a fire separation of 60 feet (18 288 mm) or greater from a property lot line, a water supply of 500 gallons per minute (1893 L/m) shall be provided.

**[F] 3313.4 Vertical construction, Types I and II construction.** If combustible building materials are delivered to the construction site, water supply in accordance with Section 3313.2 shall be provided. Additional water supply for fire flow is not required prior to commencing vertical construction of Type I and II buildings.

**[F] 3313.5 Standpipe supply.** Regardless of the presence of combustible building materials, the construction type or the fire separation distance, where a standpipe is required in accordance with Section 3311, a water supply providing a minimum flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used for this water supply shall be located within 100 feet (30 480 mm) of the fire department connection supplying the standpipe.

## **SECTION 3314 FIRE WATCH DURING CONSTRUCTION**

**[F] 3314.1 Fire watch during combustible construction.** A fire watch shall be provided during nonworking hours for construction that exceeds 40 feet (12 192 mm) in height above the lowest adjacent grade at any point along the building perimeter, for new multistory construction with an aggregate area exceeding 50,000 square feet (4645 m<sup>2</sup>) per story or as required by the fire code official.

## CHAPTER 61

# SPECIAL HAZARD AREAS

### SECTION 6101 IMPACT HAZARD GLAZING IN EXISTING BUILDINGS

**6101.1 Impact hazard glazing in existing buildings.** When application is made for a permit for alterations, repairs or additions to real property, the permit shall be withheld until the Department receives a sworn affidavit from the real property owner stating that:

1. Prior to final inspection of the work under the permit, the owner shall replace the glass in every existing sliding glass panel of sliding-type doors, other than wardrobe doors and bathroom shower doors and French-type wooden doors, in the residential portion of the building with approved safety glazing pursuant to CBC Section 2406; or
2. The owner declares the existing glazing of the glass in every sliding glass panel of sliding-type doors, other than wardrobe doors and bathroom shower doors and French-type wooden doors, in the residential portion of the building complies with the safety glazing requirements pursuant to CBC Section 2406.

**Exception:** The owner may install film on the glass in every existing sliding glass panel of sliding-type doors, other than wardrobe doors and bathroom shower doors and French-type wooden doors, in the residential portion of the building with film approved by the Department.

**6101.2 Application.** The provisions of this section shall apply only in the following circumstances:

1. To Group R-3 Occupancy, if a permit is issued with a valuation of \$10,000 or more per unit for alterations, repairs or additions;
2. To Group R-1, R-2, R-3.1 or R-4 Occupancy, if a permit is issued for \$3,000 or more per dwelling unit and/or guest room for alterations, repairs or additions;
3. To an individual unit of Group R-1, R-2, R-3.1 or R-4 Occupancy, townhouse or condominium, if a permit is issued for \$10,000 or more for alterations, repairs or additions to that individual unit; and
4. To any Group R Occupancy that is sold or exchanged, including an individual townhouse or condominium unit.

### SECTION 6102 RUBBISH ROOMS

Every room, except a room in a Group R, Division 3 Occupancy, appropriated for the storage or treatment of combustible rubbish, shall be of one-hour fire-resistive construction. All openings in interior partitions shall be protected by a fire assembly having a one-hour fire-resistive rating. All openings in exterior walls shall be protected by a fire assembly having a three-fourths hour fire-resistive rating.

### SECTION 6103 SHAFTS, PITS AND SIMILAR EXCAVATION – MISDEMEANOR

Every person owning or having charge of land upon which is located any active or abandoned mining shaft, test hole, well, pit or similar excavation which exceeds 6 inches (152.4 mm) in any lateral dimension and 3 feet (914.4 mm) in depth shall cover, fence securely or provide some equivalent protection for the hazard and keep it so protected. Failure to do so shall be a misdemeanor.

### SECTION 6104 FIRE DISTRICTS

Buildings located in a fire district shall comply with the provisions of Chapter 72 in addition to the general requirements of this Code.

### SECTION 6105 SEPARATION FROM OIL WELLS

No school, hospital, sanitarium or assembly occupancy shall be within 200 feet (60.96 m) from the center of the oil well casing.

No public utility fuel manufacturing plant or public utility electrical generating, receiving or distribution plant shall be located within 200 feet (60.96 m) from the center of the oil well casing.

No building more than 400 square feet (37 m<sup>2</sup>) in area and taller than 36 feet (10.97 m) in height shall be erected within 50 feet (15.24 m) from the center of an oil well casing.

A distance separation between the exterior wall of the building and the center of an oil well casing shall be maintained with a horizontal distance equal to 1½ times the building's height, provided however, that that distance need not exceed 200 feet (60.96 m). The building height for this provision shall be measured vertically from the adjacent lowest ground elevation to the ceiling of the top story.

The provisions specified within this section shall not apply to oil wells that have been abandoned per LAMC Section 57.5706.3.16 and in accordance with the applicable rules and regulations of the Division of Oil, Gas and Geothermal Resources of the State of California.

**Exceptions:** The distance separation may be reduced to the following:

1. 35 feet (10.66 m) separation if a solid 6 inches (152.4 mm) thick masonry wall and no shorter than 6 feet (1828.8 mm) tall to be constructed within 50 feet (15.24 m) from the building in between the oil well and all portions of the building.

## SPECIAL HAZARD AREAS

2. 26 feet (7.92 m) if any portion of the building exterior walls within 50 feet (15.24 m) from the center of an oil well casing shall be constructed with no openings and one hour fire resistive construction with a 3 foot (914.4 mm) high fire rated parapet.
3. 15 feet (4572 mm) if any portion of the building exterior walls within 50 feet from the center of an oil well casing shall be constructed with no openings and two-hour fire resistive construction with a 3 foot (914.4 mm) high fire rated parapet.

### SECTION 6106 RESERVED

### SECTION 6107 RESERVED

### SECTION 6108 RESERVED

### SECTION 6109 SWIMMING POOLS AND OTHER BODIES OF WATER – PROTECTIVE DEVICES REQUIRED

- (a) **Fences.** Every swimming pool, fish pond or other body of water, which contains water 18 inches (457.2 mm) or more in depth, shall be enclosed by a fence, the height of which, including gates, shall be not less than the 4½ feet (1371.6 mm) above the ground. Gates shall be self-latching with the latch located 4½ feet (1371.6 mm) minimum above the ground. However, for new swimming pools or spas, the height and construction of the fence and gate shall comply with the requirements of Chapter 31 of this Code, whichever is more restrictive and provides greater safety.

Where the ground surface on the side of the fence away from the body of water slopes upward, the 4½-foot clearance shall be maintained between the fence and the face of the slope.

**Exception:** The provisions of this section shall not apply to oceans, lakes, rivers, streams and similar bodies of water, which are publicly owned over which the State of California, the City, or County of Los Angeles has control and jurisdiction.

- (b) **Existing body of water.** The provisions of this section shall also apply to all existing bodies of water.



## CHAPTER 62

# SIGNS

### SECTION 6201 GENERAL PROVISIONS

**6201.1 General.** A sign shall not be erected in a manner that would confuse or obstruct the view of or interfere with exit signs required by Chapter 10 or with official traffic signs, signals or devices. Signs and sign support structures, together with their supports, braces, guys and anchors, shall be kept in repair and in proper state of preservation. The display surfaces of signs shall be kept neatly painted or posted at all times.

#### 6201.2 Sign permits.

1. A building permit shall be obtained from the Department in accordance with the provisions of Section 106 of this Code for any sign (including a temporary sign) and/or sign alteration, other than changes or replacement of copy, that are regulated by this chapter or by Chapter I of the LAMC. Where signs are illuminated by electric lighting, an electrical permit shall also be obtained as required by the Electrical Code.

#### Exceptions:

- a. Signs not exceeding 20 square feet (1.85 m<sup>2</sup>) in area, placed upon the surface of the ground, no part of which extends more than 6 feet 6 inches (1981.2 mm) above the underlying ground, which have no mechanical or moving parts or to which no electricity or other source of illumination or power are attached to or used to illuminate the sign;
  - b. Boards and signs, not to exceed 6 square feet (0.557 m<sup>2</sup>), used exclusively to display official notices issued by any court or public officer in the performance of a public duty or by a private person in giving legal notice;
  - c. Temporary signs conforming to the requirements of Article 4.4, Chapter I of the *Los Angeles Municipal Code* which contain political, ideological, or other noncommercial messages.
2. Prior to the issuance of a building permit(s) for temporary signs on temporary construction walls, and/or solid wood fences surrounding vacant lots pursuant to Section 14.4.17 of this Code, the applicant shall post with the Department of Building and Safety a bond in the amount of \$10,000.00, guaranteeing compliance with all conditions of the permit and the provisions of this ordinance. The applicant may post a surety bond, cash bond or negotiable United States Treasury Certificates of the kind approved by law for securing deposits of public money in accordance with the provisions of Section 8305, et seq., of this Code. Only one bond shall be required of each applicant regardless of the number of locations for which the applicant has requested a building permit for a temporary sign on temporary construction fences or fences surrounding vacant lots.

For purposes of this subsection, the term “applicant” shall mean the owner of the sign company or, if there is no sign company, the owner of the property.

3. The Department may revoke any sign permit as provided in LAMC Section 98.0601(a).

#### 6201.3 Sign permit priority status.

1. To maintain location, area, frontage, or spacing status, signs must be installed within six months of issuance of a building permit or prior to expiration of any permit extension granted by the Department.
2. Where more than one permit has been issued and the effect of those permits when considered together results in a violation of this chapter, all permits except the permit with the earlier date and time of issuance shall be invalid.

**6201.4 Violations.** It shall be unlawful for any person to erect, construct, install, enlarge, alter, repair, move, remove, convert, demolish, use or maintain any sign or sign support structure or cause or permit those actions to be done, in violation of any of the provisions of this Chapter.

Any person who violates or causes or permits another person to violate any of the provisions of this chapter is guilty of a misdemeanor.

**6201.5 Penalties.** Any person convicted of a misdemeanor under the provisions of this Chapter shall be punishable by a fine of not more than \$1,000.00 or by imprisonment in the county jail for a period of not more than six months, or by both fine and imprisonment. Each violation of the provisions of this Chapter and each day during which a violation is committed or continues is a separate offense.

Any person convicted of violating any provision of this Chapter may be required to pay restitution to the City of Los Angeles for all costs expended to investigate and/or enforce the provisions of this Chapter.

#### 6201.6 Modifications.

**6201.6.1 Authority.** In addition to its authority to grant slight modifications pursuant to LAMC Section 98.0403.1, the Board shall have the authority to grant significant modifications from these sign regulations.

**6201.6.2 Basis.** Before granting a significant modification, the Board must find (1) that a special, individual reason makes the strict letter of the ordinance impractical and (2) that the requested modification is in conformity with the spirit and purposes of the objectives set forth in Section 6201.6.6 of this Code.

#### 6201.6.3 Procedure.

**6201.6.3.1.** Requests for modifications in individual cases shall be made in accordance with the procedure established in LAMC Sections 98.0403.1 and 98.0403.2.

**6201.6.3.2.** The Department shall determine whether an application is for a slight modification or a significant

modification. The Department's determination that a proposed modification is significant shall be final and may not be appealed to the Board.

**6201.6.3.3.** An application for a request for significant modification shall be made to the Board. The applicant, in his or her request, shall state the special, individual reason that makes compliance with the strict letter of the provisions in question impractical and shall show that the modification requested is in conformity with the spirit and purpose of this Chapter.

On the date of receipt of filing of the application, the file of the Department shall be forwarded to the Board. Upon receipt of the application, the Board shall set the matter for hearing and give notice by mail not less than ten days before the hearing of the time, place and purpose of the hearing to the applicant, to the owners of the property involved, and to the owners of all property within or outside of the City that is within a 300-foot radius of the property on which the sign is to be placed as shown on the records of the City Engineer, or in the case of property outside the City, the records of the County Assessor.

**6201.6.4 Board referral.** The Board may refer a request for a significant modification to the Sign Advisory Committee (Section 105.4 of this Code) for evaluation and recommendation before it renders a decision.

**6201.6.5 Fees.** Processing fees for significant modifications are the same as those set forth for appeals to the Board in LAMC Section 98.0403.2. Significant modifications may also be subject to the fees set forth in Section 105.4 of this Code and LAMC Section 19.05.

**6201.6.6 Purpose.** The purpose of this Chapter is to promote public safety and welfare by regulating signs in keeping with the following objectives:

1. That the design, construction, installation, repair and maintenance of signs will not interfere with traffic safety or otherwise endanger public safety; and
2. That both the public and sign users will benefit from signs having improved legibility, readability and visibility.

## SECTION 6202 DEFINITIONS

**6202.1 General.** Unless otherwise expressly stated, the following words and terms shall, for the purposes of this chapter, have the meanings shown herein. Refer to Chapter 2 of the *California Building Code* (CBC) for general definitions.

**COMBINATION SIGN.** A sign incorporating any combination of the features of pole, projecting and roof signs.

**ELECTRIC SIGN.** A sign containing electrical wiring, but not including signs illuminated by an exterior light source.

**GROUND SIGN.** A billboard or similar type of sign which is supported by one or more uprights, poles or braces in or upon the ground other than a combination sign or pole sign, as defined by this code.

**MASONRY INFILL.** The unreinforced or reinforced masonry wall construction within a reinforced concrete frame.

**POLE SIGN.** A sign wholly supported by a sign structure in the ground.

**PROJECTING SIGN.** A sign other than a wall sign, which projects from and is supported by a wall of a building or structure.

**ROOF SIGN.** A sign erected upon or above a roof or parapet of a building or structure.

**SIGN.** Any letter, figure, character, mark, plane, point, marquee sign, design, poster, pictorial, picture, stroke, stripe, line, trademark, reading matter or illuminated service, which shall be constructed, placed, attached, painted, erected, fastened or manufactured in any manner whatsoever, so that the same shall be used for the attraction of the public to any place, subject, person, firm, corporation, public performance, article, machine or merchandise, whatsoever, which is displayed in any manner outdoors. Every sign shall be classified and conform to the requirements of that classification as set forth in this chapter.

**SIGN STRUCTURE.** Any structure which supports or is capable of supporting a sign as defined in this code. A sign structure is permitted to be a single pole and is not required to be an integral part of the building.

**SOLID MASONRY.** Shall mean reinforced masonry properly designed in accordance with Chapter 21 of this article and shall not include an unreinforced masonry bearing wall as defined in Section 8803 of this Code and masonry infill as defined in this section.

**WALL SIGN.** Any sign attached to or erected against the wall of a building or structure, except a fence wall, with the exposed face of the sign in a plane parallel to the plane of said wall.

## SECTION 6203 LOCATION

**6203.1 Location restrictions.** Signs shall not be erected, constructed or maintained so as to obstruct any fire escape or any window or door or opening used as a means of egress or so as to prevent free passage from one part of a roof to any other part thereof. A sign shall not be attached in any form, shape or manner to a fire escape, nor be placed in such manner as to interfere with any opening required for ventilation.

## SECTION 6204 IDENTIFICATION

**6204.1 Identification.** Every outdoor advertising display sign hereafter erected, constructed or maintained, for which a permit is required, shall be plainly marked with the name of the person, firm or corporation erecting and maintaining such sign and shall have affixed on the front thereof the permit number issued for said sign or other method of identification approved by the building official.

**6204.2 Notification to sign purchasers.** Any person who sells an identification sign, monument sign, pole sign, pro-

jecting sign or wall sign, as those terms are defined in Chapter I of the LAMC, for installation in the City of Los Angeles, shall provide written notice of the provisions of this Chapter to the purchaser. The Superintendent shall promulgate regulations setting forth the content for this notification.

## SECTION 6205 DESIGN AND CONSTRUCTION

**6205.1 General requirements.** Signs shall be designed and constructed to comply with the provisions of this Code for use of materials, loads and stresses. Glass panels used in signs shall comply with the size, thickness and type of glass as shown in Table 4-A of Appendix H of the CBC. The use, location, size, area and height of the sign shall comply with the provisions of this Code and Chapter I of the LAMC, whichever is more restrictive. Table 4-A of Appendix H of the CBC is adopted by reference.

**6205.2 Permits, drawings and specifications.** Where a permit is required, as provided in Chapter 1, construction documents shall be required. These documents shall show the dimensions, material and required details of construction, including loads, stresses and anchors.

**6205.3 Wind load.** Signs shall be designed and constructed to withstand wind pressure as provided for in Chapter 16.

**6205.4 Seismic load.** Signs designed to withstand wind pressures shall be considered capable of withstanding earthquake loads, except as provided for in Chapter 16.

**6205.5 Working stresses.** In outdoor advertising display signs, the allowable working stresses shall conform to the requirements of Chapter 16. The working stresses of wire rope and its fastenings shall not exceed 25 percent of the ultimate strength of the rope or fasteners.

### Exceptions:

1. The allowable working stresses for steel and wood shall be in accordance with the provisions of Chapters 22 and 23.
2. The working strength of chains, cables, guys or steel rods shall not exceed one-fifth of the ultimate strength of such chains, cables, guys or steel.

**6205.6 Attachment.** Signs attached to masonry, concrete or steel shall be safely and securely fastened by means of metal anchors, bolts or approved expansion screws of sufficient size and anchorage to safely support the loads applied.

### 6205.18 Off-site sign periodic inspection program.

**6205.18.1 General.** All off-site sign structures as defined in Section 14.4.2 of the LAMC and subject to the provisions of Chapter I of the LAMC are subject to regular inspection. Beginning February 1, 2015, the Superintendent or an authorized representative shall inspect each sign a minimum of once every two years.

**6205.18.2 Fees for inspection.** This fee shall be known as the "Off-Site Sign Periodic Inspection Fee." The person or entity in control of an off-site sign structure subject to inspection shall pay a regulatory fee of \$169.87 to the department and provide a copy of a valid permit issued by

the City of Los Angeles for each off-site sign structure or a copy of a valid permit issued by the appropriate jurisdiction if the lot was annexed to the City of Los Angeles.

The regulatory fee shall be due on February 1 every two years, starting on February 1, 2015. If the fee is not paid on or before the last day of the month in which it is due, a monthly penalty equal to five percent of any outstanding fee, but not less than \$10.00, shall be added to the outstanding fee each month until the outstanding fee is paid. Should the person or entity in control fail to pay the required fee, the City of Los Angeles may recover the fee, plus accrued penalties, utilizing any remedy approved by law.

The Department shall cause all money collected pursuant to this section to be deposited into the Off-Site Sign Periodic Inspection Fee Trust Fund described in Section 5.111.17 of the Los Angeles Administrative Code for purposes of disbursement as that section permits.

The regulatory fee shall be used to finance the costs of administering the inspection program, including, but not limited to, inspection and maintenance of an off-site sign structure database. Payment of the fee shall not create a presumption that the sign is lawfully erected, as that term is defined in Section 6205.18.7.

**6205.18.3 Inspection records.** The Department shall keep records of the off-site sign inspection program, showing the following information for each off-site sign structure subject to inspection pursuant to Section 6205.18: the payment of inspection fees; that inspections have been conducted; any known building permit number; size of sign as shown on any known building permit; issuance date of any known building permit; any subsequent building permits issued for that sign; any information required pursuant to this Chapter or obtained pursuant to inspection; and whether the off-site sign structure has been determined to be in compliance with the terms of all known building permits and with all applicable regulations at the time the permit was issued.

**6205.18.4 Frequency of inspection.** Each off-site sign structure shall be inspected once every two years.

**6205.18.6 Orders.** If, upon inspection, the Superintendent or an authorized representative observes one or more violations of the LAMC, the Superintendent shall issue an Order to Comply. The person in control of the sign shall eliminate all violations by the compliance date stated on the Order to Comply.

**6205.18.7 Violations.** If the Department determines that an off-site sign structure was not lawfully erected, then the off-site sign structure shall have its sign face removed and replaced with blank panels until the off-site sign structure is made to comply with the applicable provisions of the LAMC. The term "lawfully erected" means an off-site sign structure that was erected in compliance with the provisions of the LAMC in effect at the time of its erection or which was subsequently brought into full compliance with the provisions of the LAMC, except that the term does not apply to any off-site sign structure whose use was modified after erection in a manner that caused it to become illegal.

## SECTION 6206 ELECTRICAL

**6206.1 Illumination.** A sign shall not be illuminated by other than electrical means, and electrical devices and wiring shall be installed in accordance with the requirements of the *California Electrical Code*. Any open spark or flame shall not be used for display purposes unless specifically approved.

**6206.1.1 Internally illuminated signs.** Except as provided for in CBC Sections 402.6.4 and 2611, where internally illuminated signs have facings of wood or approved plastic, the area of such facing section shall be not more than 120 square feet (11.16 m<sup>2</sup>) and the wiring for electric lighting shall be entirely enclosed in the sign cabinet with a clearance of not less than 2 inches (51 mm) from the facing material. The dimensional limitation of 120 square feet (11.16 m<sup>2</sup>) shall not apply to sign facing sections made from flame-resistant-coated fabric (ordinarily known as “flexible sign face plastic”) that weighs less than 20 ounces per square yard (678 g/m<sup>2</sup>) and that, when tested in accordance with NFPA 701, meets the fire propagation performance requirements of both Test 1 and Test 2 or that, when tested in accordance with an approved test method, exhibits an average burn time of 2 seconds or less and a burning extent of 5.9 inches (150 mm) or less for 10 specimens.

**6206.2 Electrical service.** Signs that require electrical service shall comply with NFPA 70.

## SECTION 6207 COMBUSTIBLE MATERIALS

**6207.1 Use of combustibles.** Wood, approved plastic or plastic veneer panels as provided for in Chapter 26 of this Code or other materials of combustible characteristics similar to wood that is used for moldings, cappings, nailing blocks, letters and latticing shall comply with Section 6209.1 of this Code and shall not be used for other ornamental features of signs, unless approved..

**6207.1.1 Plastic materials.** Notwithstanding any other provisions of this code, plastics that burn at a rate not faster than 2.5 inches per minute (64 mm/s) when tested in accordance with ASTM D635 shall be approved for use as the display surface material and for the letters, decorations and facings on signs and outdoor display structures.

**6207.1.2 Electric sign faces.** Individual plastic facings of electric signs shall not exceed 200 square feet (18.6 m<sup>2</sup>) in area.

**6207.1.3 Area limitation.** If the area of a display surface exceeds 200 square feet (18.6 m<sup>2</sup>), the area occupied or covered by plastics complying with the requirements of Section H107.1.1 shall be limited to 200 square feet (18.6 m<sup>2</sup>) plus 50 percent of the difference between 200 square feet (18.6 m<sup>2</sup>) and the area of display surface. The area of plastic on a display surface shall not in any case exceed 1,100 square feet (102 m<sup>2</sup>).

**6207.1.4 Plastic appurtenances.** Letters and decorations mounted on a plastic facing or display surface can be made

of plastics complying with the requirements of Section H107.1.1.

## SECTION 6208 ANIMATED DEVICES

**6208.1 Fail-safe device.** Signs that contain moving sections or ornaments shall have fail-safe provisions to prevent the section or ornament from releasing and falling or shifting its center of gravity more than 15 inches (381 mm). The fail-safe device shall be in addition to the mechanism and the mechanism’s housing that operate the movable section or ornament. The fail-safe device shall be capable of supporting the full dead weight of the section or ornament when the moving mechanism releases.

## SECTION 6209 GROUND SIGNS

**6209.1 Height restrictions.** The structural frame of ground signs shall not be erected of combustible materials to a height of more than 35 feet (10 668 mm) above the ground. Ground signs constructed entirely of noncombustible material shall not be erected to a height of greater than 100 feet (30 480 mm) above the ground. Greater heights are permitted where approved and located so as not to create a hazard or danger to the public.

**6209.3 Wood anchors and supports.** Where wood anchors or supports are embedded in the soil, the wood shall be pressure treated with an approved preservative.

## SECTION 6210 ROOF SIGNS

**6210.1 General.** Roof signs shall be constructed entirely of metal or other approved noncombustible material except as provided for in Sections 6206.1.1 and 6207.1 of this Code. Provisions shall be made for electric grounding of metallic parts. Where combustible materials are permitted in letters or other ornamental features, wiring and tubing shall be kept free and insulated from each other. Roof signs shall be so constructed as to leave a clear space of not less than 6 feet (1829 mm) between the roof level and the lowest part of the sign and shall have at least 5 feet (1524 mm) clearance between the vertical supports. No portion of any roof sign structure shall project beyond an exterior wall.

**6210.2 Bearing plates.** The bearing plates of roof signs shall distribute the load directly to or on masonry walls, steel roof girders, columns or beams. The building shall be designed to avoid overstress of these members.

**6210.3 Height of solid signs.** A roof sign having a solid surface shall not exceed, at any point, a height of 24 feet (7315 mm) measured from the roof surface.

**6210.4 Height of open signs.** Open roof signs in which the uniform open area is not less than 40 percent of total gross area shall not exceed a height of 75 feet (22 860 mm) on buildings of Type 1 or Type 2 construction. On buildings of other construction types, the height shall not exceed 40 feet

(12 192 mm). Such signs shall be thoroughly secured to the building on which they are installed, erected or constructed by iron, metal anchors, bolts, supports, chains, stranded cables, steel rods or braces and they shall be maintained in good condition.

**6210.5 Height of closed signs.** A closed roof sign shall not be erected to a height greater than 50 feet (15 240 mm) above the roof of buildings of Type 1 or 2 construction or more than 35 feet (10 668 mm) above the roof of buildings of Type 3, 4 or 5 construction.

## SECTION 6211 WALL SIGNS

**6211.1 Materials.** Wall signs that have an area exceeding 40 square feet (3.72 m<sup>2</sup>) shall be constructed of metal or other approved noncombustible material, except for nailing rails and as provided for in Sections 6206.1.1 and 6207.1 of this Code.

**6211.2 Exterior wall mounting details.** Wall signs attached to exterior walls of solid masonry, concrete or stone shall be safely and securely attached by means of metal anchors, bolts or expansion screws of not less than  $\frac{3}{8}$  inch (9.5 mm) diameter and shall be embedded not less than 5 inches (127 mm). Wood blocks shall not be used for anchorage, except in the case of wall signs attached to buildings with walls of wood. A wall sign shall not be supported by anchorages secured to an unbraced parapet wall.

**6211.3 Extension.** Wall signs shall not extend above the top of the wall or beyond the ends of the wall to which the signs are attached unless such signs conform to the requirements for roof signs, projecting signs or ground signs.

## SECTION 6212 PROJECTING SIGNS

**6212.1 General.** Projecting signs shall be constructed entirely of metal or other noncombustible material and securely attached to a building or structure by metal supports such as bolts, anchors, supports, chains, guys or steel rods. Staples or nails shall not be used to secure any projecting sign to any building or structure. The dead load of projecting signs not parallel to the building or structure and the load due to wind pressure shall be supported with chains, guys or steel rods having net cross-sectional dimension of not less than  $\frac{3}{8}$  inch (9.5 mm) diameter. Such supports shall be erected or maintained at an angle of not less than 45 percent (0.78 rad) with the horizontal to resist the dead load and at angle of 45 percent (0.78 rad) or more with the face of the sign to resist the specified wind pressure. If such projecting sign exceeds 30 square feet (2.8 m<sup>2</sup>) in one facial area, there shall be provided not fewer than two such supports on each side not more than 8 feet (2438 mm) apart to resist the wind pressure.

**6212.2 Attachment of supports.** Supports shall be secured to a bolt or expansion screw that will develop the strength of

the supporting chains, guys or steel rods, with a minimum  $\frac{5}{8}$ -inch (15.9 mm) bolt or lag screw, by an expansion shield. Turnbuckles shall be placed in chains, guys or steel rods supporting projecting signs.

**6212.3 Wall mounting details.** Chains, cables, guys or steel rods used to support the live or dead load of projecting signs are permitted to be fastened to solid masonry walls with expansion bolts or by machine screws in iron supports, but such supports shall not be attached to an unbraced parapet wall. Where the supports must be fastened to walls made of wood, the supporting anchor bolts must go through the wall and be plated or fastened on the inside in a secure manner.

**6212.4 Height limitation.** A projecting sign shall not be erected on the wall of any building so as to project above the roof or cornice wall or, on buildings without a cornice wall, above the roof level except that a sign erected at a right angle to the building, the horizontal width of which sign is perpendicular to such a wall and does not exceed 18 inches (457 mm), is permitted to be erected to a height not exceeding 2 feet (610 mm) above the roof or cornice wall or above the roof level where there is no cornice wall. A sign attached to a corner of a building and parallel to the vertical line of such corner shall be deemed to be erected at a right angle to the building wall.

**6212.5 Additional loads.** Projecting sign structures that will be used to support an individual on a ladder or other servicing device, whether or not specifically designed for the servicing device, shall be capable of supporting the anticipated additional load, but not less than a 100-pound (445 N) concentrated horizontal load and a 300-pound (1334 N) concentrated vertical load applied at the point of assumed or most eccentric loading. The building component to which the projecting sign is attached shall be designed to support the additional loads.

## SECTION 6213 MARQUEE SIGNS

**6213.1 Materials.** Marquee signs shall be constructed entirely of metal or other approved noncombustible material and/or approved plastic and glass.

**6213.2 Attachment.** Marquee signs shall be attached to approved marquees that are constructed in accordance with Section 3106.

**6213.3 Dimensions.** Marquee signs, whether on the front or side, shall not project beyond the perimeter of the marquee.

**6213.4 Height limitation.** Marquee signs shall not extend more than 6 feet (1829 mm) above, or 1 foot (305 mm) below such marquee. Signs shall not have a vertical dimension greater than 8 feet (2438 mm).

## SECTION 6214 PORTABLE SIGNS (Reserved)

### SECTION 6215 REFERENCED STANDARDS

ASTM D635-03	Test Method for Rate of Burning and/or Extent and Time of Burning of Self-Supporting Plastics in a Horizontal Position	Section 6207.1.1
NFPA 70-08	National Electrical Code	Sections 6206.1, 6206.2
NFPA 701-99	Methods of Fire Test for Flame Propagation of Textiles and Films	Section 6206.1.1

### SECTION 6216 EXISTING SIGNS

**6216.1 Existing sign rights.** Every existing sign and/or sign support structure constructed under a valid permit and used in conformance with these regulations and Department approvals in effect at the time of construction shall be allowed to continue to exist under those regulations and approvals even though subsequent adopted regulations and approvals have changed the requirements.

**6216.2 Maintenance of existing signs.** Every sign and/or sign support structure shall be maintained in conformity with the requirements of this Chapter and Chapter I of the LAMC.

**6216.3 Illegal signs, construction and use.** Every existing sign and/or sign support structure or portion of a sign and/or sign support structure constructed without a valid building permit shall be made to conform to the current provisions of this Code or shall be demolished and removed. Any use of an existing sign constructed without a valid building permit shall be discontinued.

#### 6216.4 Alterations, repairs or rehabilitation.

**6216.4.1.** Alterations, repairs or rehabilitation of any existing sign and/or support structure may be of the same type of construction as the existing sign or sign support structure provided:

1. The aggregate value of the work in any one year does not exceed 10 percent of the replacement cost of both the sign and sign support structure; and
2. That there is no increase in the sign area or height and no change in the location or orientation of the sign.

**6216.4.2.** Alterations, repairs or rehabilitation of existing sign and/or sign support structures in excess of 10 percent of the replacement cost of both the sign and sign support structure may be made provided:

1. That the cost of the work does not exceed 50 percent of the replacement cost of both the sign and sign support structure; and

2. That there is no increase in the sign area or height and no change in the location or orientation of the sign; and

3. All new construction shall be as required for a new sign of the same type.

**6216.4.3.** Alterations, repairs or rehabilitation of existing sign and/or sign support structures that exceed 50 percent of the replacement cost of both the sign and sign support structure shall comply with all the requirements of this Code.

**6216.5 Additions.** Existing signs and/or sign support structures with additions or alterations that increase the sign area or height or which change the location or orientation of the sign shall comply with all of the requirements of this Code.

TABLE 4-A  
SIZE, THICKNESS AND TYPE OF GLASS PANELS IN SIGNS

MAXIMUM SIZE OF EXPOSED PANEL		MINIMUM THICKNESS OF GLASS (INCHES)	TYPE OF GLASS
ANY DIMENSION (INCHES)	AREA (SQUARE INCHES)		
30	500	$\frac{1}{8}$	Plain, plate or wired
45	700	$\frac{3}{16}$	Plain, plate or wired
144	3,600	$\frac{1}{4}$	Plain, plate or wired
> 144	> 3,600	$\frac{1}{4}$	Wired glass

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm<sup>2</sup>.

TABLE 4-B  
THICKNESS OF PROJECTION SIGN

PROJECTION (FEET)	MAXIMUM THICKNESS (FEET)
5	2
4	2.5
3	3
2	3.5
1	4

For SI: 1 foot = 304.8 mm.

## CHAPTER 63

# ADDITIONAL PROVISIONS FOR SPECIFIC USES

### SECTION 6301 GENERAL

In addition to the requirements of this code, buildings housing special uses as specified herein shall conform to the requirements of this chapter.

### SECTION 6302 FOOD ESTABLISHMENT

**6302.1 General.** This section shall apply to every building or portion thereof appropriated to the processing, storage or sale of food or drink for human consumption, but not including any private dwelling. Every food establishment shall conform to the requirements of this Code.

#### Exceptions:

1. Food establishments that are used exclusively for the sale of farm produce sold at or on the premises where produced.
2. Food preparation units installed in school buildings with the following provisions:
  - A. A sign must be posted requiring all mouth utensils to be of single-use, disposable type.
  - B. The floor surface of the area must be of linoleum, asphalt tile, or equivalent nonabsorbent material.
  - C. A residential-type vent must be installed when a residential kitchen range is provided.
3. Employee lunch rooms if no food other than beverages is prepared on the premises, and provided all mouth utensils are of the disposable type. Heating devices limited to this use need not be vented.
4. Food establishments in which all food is to be sold in sealed packages, and in which there is to be no preparing or packaging of food, shall comply with all applicable food establishment regulations. The Certificate of Occupancy shall state "Packaged Food Only."

**6302.2 Ceiling heights.** Every room shall have a ceiling height of not less than 8 feet (2438.4 mm) between the finished floor and the finished ceiling.

#### Exceptions:

1. Toilet rooms may have a ceiling height of not less than 7 feet 6 inches (2286 mm).
2. Refrigerated cold storage rooms are exempted from this ceiling height requirement.

**6302.3 Special ventilation.** A mechanical exhaust ventilation system capable of effectively removing cooking odors, smoke, steam, grease and vapors shall be provided at or above cooking equipment such as ranges, griddles, ovens, deep fat fryers, barbecues and rotisseries.

All hoods, ducts, fans and other devices provided to ventilate the cooking areas of commercial food preparation equipment in commercial food establishments shall be installed as required by and in compliance with the provisions of the Los Angeles Mechanical Code. Rooms in which exhaust systems are installed shall be provided with acceptable air inlets to admit at least as much air as is exhausted by these systems.

Ducts penetrating a ceiling or floor shall be enclosed in a shaft enclosure conforming to the requirements of CBC Section 713. Where a shaft enclosure is not required by CBC Section 713, ducts that convey grease vapors shall be enclosed in a one-hour fire-resistive shaft. The shaft shall be separated from the duct by a minimum 6 inch (152.4 mm) air space vented to the outside air.

**6302.4 Toilet rooms and vestibules.** Toilet rooms and vestibules for public or employees shall conform to the following standards:

1. **Toilet rooms required.** Toilet rooms shall be provided in accordance with the Los Angeles Plumbing Code.
2. **Location.** Toilet rooms shall be located on the premises of the food establishment. Toilet rooms for public use shall be readily accessible to customers. Toilet rooms shall be separated from other portions of the establishment by a tight-fitting, self-closing door.

Additional lavatories or equivalent hand-washing facilities shall be provided in all food preparation areas where the lavatories required in Item 1 are not conveniently located on the same floor and in or adjacent to the food preparation areas.
3. **Privacy.** Toilet rooms shall be so arranged or equipped with view screens as to protect users of toilets and urinals from view from outside the room when the door to the toilet room is open.

**Exception:** View screen is not required if the toilet room is only for single accommodation, unisex and a bathroom is provided.

4. **Dimensions.** Toilet rooms shall have dimensions and area as required in Chapter 11.

**6302.5 Employee storage areas.** Lockers or other suitable facilities within food establishments shall be provided in compliance with Section 114256 of the California Health and Safety Code as enforced by the Los Angeles County Department of Public Health.

**6302.6 Garbage rooms.** Restaurants with a seating capacity of 50 or more patrons shall be provided with a room or enclosed space for the keeping of garbage containers. The room shall have portland cement plaster, fireclay tile, ceramic tile or equally durable waterproof walls to a height of at least six feet above the floor. Doors and windows of such rooms shall be tight fitting and self-closing and all exterior openings shall be screened. Each such room shall be equipped with a hose or other suitable garbage can washing device connected

## ADDITIONAL PROVISIONS FOR SPECIFIC USES

to hot and cold running water and the floor shall slope to a drain and comply the requirements of the Los Angeles County Health Department.

**Exception:** Such garbage rooms need not be provided at places maintaining an approved device for discharging garbage to the sewer system.

**6302.7 Rat protection.** Every food establishment shall be completely surrounded by a continuous exterior foundation wall not less than 12 inches (304.8 mm) below grade.

### SECTION 6303 SERVICE STATIONS

Every service station located within 660 feet (201.16 m) of an accessible right-of-way of any interstate or primary highway, as defined in California Business and Professions Code Sections 5215 and 5220, shall provide, during business hours, public restrooms for use by its customers. The public restroom shall not be temporary or portable but shall be permanent and shall include separate facilities for men and women, each with toilets and sinks suitable for use by disabled persons in accordance with Chapter 11 and shall be maintained in a clean and sanitary manner. This section shall not apply to service stations which are fully operational prior to January 1, 1990.

### SECTION 6304 RESIDENTIAL USES

**6304.1 Interior doors.** In any residential building, every interior door in a doorway through which occupants pass shall have a minimum width of 32 inches (812.8 mm).

**Exception:** The provisions of this section shall not apply to doors located in shower compartment and bathtub enclosures.

**6304.2 Interior illumination.** All recreation or service rooms accessory to apartment houses shall be provided with an incandescent light bulb (minimum of 60 watts) or other artificial light at a maximum height of 8 feet (2438.4 mm) and shall provide have a minimum average surface illumination of 0.2 footcandles (2.15 lx) at floor level. Where, in any specific case, different sections of the LAMC specify different requirements, the most restrictive shall govern.

**Exception:** Recreation or service rooms accessory to condominiums which comply with Article 2.9 (condominiums) of Chapter I of the LAMC.

**6304.3 Additional requirements for installation of bars, grills, grates or similar devices.** In addition to the requirements of CBC Section 1030, all bars, grills, grates or similar devices shall comply with the following:

1. A permit is obtained from the Department and a fee is paid as required in Section 107.4.5. Any permit so issued shall be valid for a period of 90 days from its issuance. The Department may allow a "certified installer" to be used, in lieu of obtaining a permit, in accordance with Section 1710.
2. Any person who willfully or knowingly, with the intent to deceive, makes a false statement or representation, or

knowingly fails to disclose a material fact in any documentation required by the Department to ascertain facts relative to this Section, Section 107.4.5 or to Section 1710, including any oral or written evidence presented, shall be guilty of a misdemeanor.

### SECTION 6305 PARKING GARAGES SERVING RESIDENTIAL USES

**6305.1 Light.** All parking garages serving dwelling units or guest rooms shall be provided with an incandescent light bulb (minimum of 60 watts) or other artificial light at a maximum height of 8 feet (2438.4 mm) and shall provide a minimum average surface illumination of 0.2 footcandles (2.15 lx) at floor level. Where, in any specific case, different sections of the LAMC specify different requirements, the most restrictive shall govern.

**6305.2 Exterior illumination.** All parking garages serving dwelling units or guest rooms shall be provided with an incandescent light bulb (minimum of 60 watts) or other artificial light at a maximum height of 8 feet (2438.4 mm) and shall provide have a minimum average surface illumination of 0.2 footcandles (2.15 lx), however, exterior lighting that is brighter than 2 footcandles (21.5 lx) and affecting adjacent residential properties shall be activated by motion sensors for a period of not to exceed 20 minutes.

Exterior lighting shall be provided for areas accessory to apartment houses, such as, driveways, side yards, walkways, recreation areas and similar locations.

Where, in any specific case, different sections of the LAMC specify different requirements, the most restrictive shall govern.

### SECTION 6306 ANTI-GRAFFITI FINISH TO EXTERIOR WALLS

In all buildings, the first nine feet, measured from grade, of exterior walls and doors shall be built and maintained with a graffiti-resistant finish consisting of either a hard, smooth, impermeable surface such as ceramic tile or baked enamel, or a renewable coating of an approved anti-graffiti material, or a combination of both.

**Exception:** A building where the building owner files a "Covenant and Agreement Regarding Maintenance of Building (Graffiti Removal)" with the Department, agreeing to remove the graffiti within seven days of the graffiti being applied or within 72 hours of being notified by the Department to remove the graffiti. If the building owner fails to abide by the Covenant and Agreement, the Covenant and Agreement between the building owner and the Department may be terminated by the Department and the requirements of this section shall apply to the building owner.

### SECTION 6307 SHOWER AND LOCKER FACILITIES

**6307.1 Shower and locker facilities for office commercial, business and professional uses.** For office commercial,



business and professional uses in the C and M zones, and for buildings owned by the City and used by the City for government purposes, regardless of zone, shower facilities shall be available and accessible for all employees in new buildings and in existing buildings, when additions are made thereto, as follows:

1. For new buildings and additions to existing building with at least 50,000 square feet (4645.15 m<sup>2</sup>) of floor area, one shower for each gender;
2. For new buildings and additions to existing buildings with 150,000 square feet (13 935.45 m<sup>2</sup>) to less than 250,000 square feet (23 225.76 m<sup>2</sup>) of floor area, two showers for each gender.
3. For new buildings and additions to existing buildings with 250,000 square feet (23 225.76 m<sup>2</sup>) of floor area or more, one additional shower for each gender for each increment of 100,000 square feet (9290 m<sup>2</sup>) of floor area or portion thereof.

For the uses specified above, where bicycle parking spaces are required pursuant to LAMC Section 12.21-A16, one locker facility shall be provided for each required bicycle parking space. Locker facilities required by this section shall be located to permit access by either gender.

**6307.2 Shower and locker facilities for industrial uses.** For industrial uses in the C and M zones, shower facilities shall be available and accessible for all employees in new buildings and in existing buildings, when additions are made thereto, as follows:

For new buildings and additions to existing building with 50,000 square feet (4645.15 m<sup>2</sup>) of floor area and greater, one shower for each gender.

For the uses specified above, where bicycle parking spaces are required pursuant to LAMC Section 12.21-A16, one locker facility shall be provided for each required bicycle parking space. Locker facilities required by this section shall be located to permit access by either gender.

For new buildings and additions to existing building with 50,000 square feet (4645 m<sup>2</sup>) of floor area and greater, one shower for each gender.

For the uses specified above, where bicycle parking spaces are required pursuant to Section 12.21-A16 of the Los Angeles Municipal Code, one locker facility shall be provided for each required bicycle parking space. Locker facilities required by this section shall be located to permit access by either gender.

**6307.3 Shower and locker facilities for retail and other commercial uses.** For retail and other commercial uses in the C and M zones not specified herein, employee shower facilities shall be available and accessible for all employees in new buildings and in existing buildings, when additions are made thereto, as follows:

1. For new buildings and additions to existing building with at least 100,000 square feet (9290.30 m<sup>2</sup>) to less than 300,000 square feet (27 870.91 m<sup>2</sup>) of floor area, one shower for each gender;

2. For new buildings and additions to existing buildings with 300,000 square feet (27 870.91 m<sup>2</sup>) of floor area or greater, one additional shower for each gender for each additional increment of 200,000 square feet (18 580.60 m<sup>2</sup>) of floor area or portion thereof.

For the uses specified above, where bicycle parking spaces are required pursuant to LAMC Section 12.21-A16, one locker facility shall be provided for each required bicycle parking space. Locker facilities required by this section shall be located to permit access by either gender.



## CHAPTER 67

# SECURITY PROVISIONS

### SECTION 6701 PURPOSE

The purpose of this chapter is to provide a nominal level of resistance to unlawful entry of buildings by establishing minimum standards of construction and hardware for the closure of openings regulated by this chapter.

### SECTION 6702 GENERAL

In every Group B, F, M, S and R Occupancy, the openings regulated by this chapter shall be completely secured in accordance with the provisions specified herein.

**Exceptions:** The requirements of this chapter shall not apply to:

1. Detached buildings which are accessory to Group R-3 Occupancies.
2. Group B, F, M, S Occupancies which, by the nature of their operation, are unenclosed.
3. Group B, F, M, S Occupancies where the owner submits written notice to the Department of intent to substitute security personnel and/or site security installations in lieu of requirements of this chapter of this Code. Such exemption shall be subject to the concurrence of the Department and shall be one of the conditions upon which the Certificate of Occupancy is issued.

### SECTION 6703 LIMITATIONS

The provisions of this Chapter shall not be applicable to latching or locking devices on exit doors to the extent that the provisions of this Chapter are contrary to the provisions of CBC Section 402.8.8 and CBC Chapter 10 nor shall the regulations of this Chapter be construed to waive any other provision of this Code.

No person shall sell, offer for sale, advertise, display for sale or install any metal bars, grilles, grates, security roll-down shutters or similar devices manufactured or installed to preclude human entry through windows and exterior doors without a label attached to each product, printed in at least ten-point type and that reads as follows: "A building permit is required in most cases for the installation of this product. If this product is installed in a sleeping room, unless excepted by the provisions of CBC Section 1030, the device must be equipped with a quick-release latch operable from inside and the dwelling unit provided with an approved smoke detector."

### SECTION 6704 ALTERNATIVE SECURITY PROVISIONS

The provisions of this Chapter are not intended to prevent the use of any device, hardware, or method of construction, not specifically prescribed in this Chapter, when such alternate provides equivalent security and is approved by the Department.

### SECTION 6705 DEFINITIONS

For the purpose of this chapter, certain terms are defined as follows:

**CYLINDER GUARD.** A ring surrounding the exposed portion of the lock cylinder, or any other device, which is so fastened as to protect the cylinder from wrenching, prying, cutting, or pulling by attack tools. The ring shall be made from steel or brass and shall have a minimum taper of 15 degrees (0.29 rad).

**DEADLOCKING LATCH.** A latch in which the latch bolt is positively held in the projected position by a guard bolt, a plunger or an auxiliary mechanism.

**DEADBOLT.** A bolt which has no automatic spring action and which is operated by a key cylinder, thumb-turn, or lever, and is held fast when in the projected position.

**ENCLOSING PARTITION.** A partition extending the full height of the story to the floor or roof above separating tenant spaces.

**LATCH.** A device for automatically retaining a door, upon its closing, in a closed position.

**SECURITY OPENING.** An opening in a wall, partition, or roof when such opening occurs in any of the following locations:

1. In an exterior wall and less than 16 feet (4876.8 mm) above the grade of any adjoining yard, court, passageway, public way, walk, breezeway, patio, planter porch or similar area.
2. In an exterior wall and less than 16 feet (4876.8 mm) above the surface of any adjoining roof, balcony, landing, stair tread, platform, or similar structure when that surface is accessible to the public or another tenant or when any portion of such surface is itself less than 16 feet (4876.8 mm) above an accessible grade.
3. In the enclosing partitions of a dwelling unit, private garage, guest room or single-tenant non-residential area.
4. In a roof when any portion of such roof is less than 16 feet (4876.8 mm) above an accessible grade or surface accessible by another tenant or the public.

## SECTION 6706 ENTRY VISION

In residential occupancies, all entry doors to dwelling units or guest rooms shall be arranged so that the occupant has a view of the area immediately outside the door without opening the door. Such view may be provided by a door viewer, through windows located in the vicinity of the door or through view ports in the door or adjoining wall. Such windows or view ports shall be constructed in compliance with the provisions of Section 6713.

## SECTION 6707 APPURTENANT ACCESS

Buildings located within 8 feet (2438.4 mm) of utility poles or similar structures which could otherwise be used to gain access to the building's roof, balcony or similar surfaces shall have access to such building surfaces protected by screens, barricades or fences made of materials which preclude human climbing. Such protection shall extend to where the surfaces are more than 8 feet (2438.4 mm) from the pole or access structure.

## SECTION 6708 DOORS – GENERAL

Every door in a security opening shall be constructed, installed and secured as set forth in Sections 6709, 6710, 6711 and 6712. Glazing in doors shall comply with Section 6713.

Every door in a security opening for an apartment house shall be provided with an incandescent light bulb (minimum of 60 watts) at a maximum height of 8 feet (2438.4 mm) or lights on the exterior side of the unit that have a minimum surface illumination of 0.2 footcandles (2.15 lx) at the security opening. Where, in any specific case, different sections of the LAMC specify different requirements, the most restrictive shall govern.

## SECTION 6709 SWINGING DOORS

**6709.1.** Swinging wood doors which are openable from the inside without the use of a key shall be of one of the following constructions or shall be of a construction having equivalent forced entry resistance:

1. Solid core doors not less than  $1\frac{3}{8}$  inches (34.92 mm) in thickness.
2. Wood panel type door with panels fabricated of lumber not less than  $\frac{9}{16}$  inch (14.27 mm) thickness provided shaped portions of the panels are not less than  $\frac{1}{4}$  inch (6.35 mm) thick. Individual panels shall not exceed 300 square inches (.19 m<sup>2</sup>) in area. Stiles and rails shall be of solid lumber with overall dimensions of not less than  $1\frac{3}{8}$  inches (34.92 mm) in thickness and three inches in width. Mullions shall be considered a part of adjacent panels unless sized as required herein for stiles and rails, except mullions not over 18 inches (457.2 mm) long may have an overall width of not less than 2

inches (50.8 mm). Carved areas shall have a thickness of not less than  $\frac{3}{8}$  inches (9.52 mm). Dimensional tolerances published in recognized industry standards may be utilized.

3. Hollow core doors or doors less than  $1\frac{3}{8}$  inches (34.92 mm) in thickness either of which are covered on the inside face with 16 gauge sheet metal attached with screws at 6 inches (152.4 mm) maximum centers around the perimeter. Glazing in doors shall be as set forth in Section 6713.

**6709.2.** A single swinging door, the active leaf of a pair of doors, and the bottom leaf of Dutch doors shall be equipped with a deadbolt and deadlocking latch. The deadbolt and latch may be activated by one lock or by individual locks. Deadbolts shall contain hardened inserts to repel cutting tools. The lock or locks shall be key-operated from the exterior side of the door and operable from the interior side by a device which does not require a key, special knowledge, or special effort to operate.

### Exceptions:

1. The latch may be omitted from doors in Group B, F, M, S Occupancies.
2. In other than residential buildings, locks may be key operated on the inside when not prohibited by the provisions of CBC Section 402.8.8 or CBC Chapter 10.
3. A swinging door greater than 5 feet (1524 mm) in width may be secured as set forth in Section 6711.

A straight deadbolt shall have a minimum throw of 1 inch (25.4 mm) and an embedment of not less than  $\frac{5}{8}$  inch (15.87 mm) into the holding device receiving the projected bolt. A hook-shaped or an expanding-lug deadbolt shall have a minimum throw of  $\frac{3}{4}$  inch (19.05 mm). All deadbolts of locks which automatically activate two or more deadbolts shall embed at least  $\frac{1}{2}$  inch (12.7 mm) into the holding devices receiving the projected bolts.

**6709.3.** The inactive leaf of a pair of doors and the upper leaf of Dutch doors shall be equipped with a deadbolt or deadbolts as set forth in Section 6709.2.

### Exceptions:

1. The deadbolt or bolts need not be key operated, but shall not be otherwise activated from the exterior side of the door.
2. The deadbolt or bolts may be engaged or disengaged automatically with the deadbolt or by another device on either the active leaf or the lower leaf.
3. Manually operated hardened bolts at the top and bottom of the leaf which embed a minimum of  $\frac{1}{2}$  inch (12.7 mm) into the receiving device may be used when not prohibited by Chapter 10.

**6709.4.** Door stops of in-swinging doors shall be of one-piece construction with the jamb, or joined by rabbet to the jamb.

**6709.5.** All pin-type hinges which are accessible from outside the secured area when the door is closed shall have non-removable hinge pins. In addition, such hinges shall have jamb studs which project through both hinge leaves and pre-

vent removal of the door if the pin is removed from the hinge. Jamb studs shall be not less than  $\frac{1}{4}$  inch (6.35 mm) diameter steel and shall project into the door and jamb not less than  $\frac{1}{4}$  inch (6.35 mm).

**Exception:** Jamb studs are not required for hinges which are shaped to prevent removal of the door if the hinge pin is removed.

**6709.6.** Cylinder guards shall be installed on all mortise or rim-type cylinder locks whenever the cylinder projects beyond the face of the door or is otherwise accessible to gripping tools.

**6709.7.** In wood construction, the metal strike plate for latches shall be secured to the jamb with screws and the holding device for projecting dead bolts shall be secured to the jamb and wall framing with at least two screws not less than  $\frac{1}{2}$  inches (63.5 mm) in length which penetrate the wall framing. In aluminum construction, the strike plate and dead bolt holding device shall be secured in an area of reinforced heavy gage jamb material.

## SECTION 6710 SLIDING GLASS DOORS

Sliding glass doors shall be equipped with locking devices and shall be so constructed and installed that they remain intact and engaged when subjected to the tests specified in Section 6717.1. Cylinder guards shall be installed on all mortise or rim-type cylinder locks whenever the cylinder projects beyond the face of the door or is otherwise accessible to gripping tools. A device shall be installed in the upper channel of the moving panel to prohibit raising and removal of the moving panel from the track while in the closed position.

## SECTION 6711 OVERHEAD AND SLIDING DOORS

Metal or wooden overhead and sliding doors shall be secured with a cylinder lock, padlock with a minimum  $\frac{9}{32}$  inch (7.13 mm) diameter hardened steel shackle bolted, hardened steel hasps, metal slide board, bolt or equivalent device unless secured by an electrical power operation.

Cylinder guards shall be installed on all mortise or rim-type cylinder locks whenever the cylinder projects beyond the face of the door or is otherwise accessible to gripping tools.

## SECTION 6712 METAL ACCORDION-GRATE OR GRILLE-TYPE DOORS

Metal accordion-grate or grille-type doors shall be equipped with metal guides at the top and bottom and cylinder locks or padlocks having minimum  $\frac{9}{32}$  inch (7.13 mm) hardened steel shackles with hardened steel hasps, bolted in place.

Cylinder guards shall be installed on all mortise or rim-type cylinder locks whenever the cylinder projects beyond the face of the door or is otherwise accessible to gripping tools.

## SECTION 6713 GLAZED OPENING – GENERAL

All windows, skylights, glazing in doors or other glazing in security openings shall conform to this section and to the applicable requirements of Sections 6714, 6715 and 6716.

Glazed openings within 40 inches (1016 mm) of the required locking device of the door, when the door is in the closed and locked position and when the door is operable from the inside without the use of a key, shall be fully tempered glass, conforming to the provisions of CBC Section 2406, or approved burglary-resistant material, or shall be protected by metal bars, screens or grilles having a pattern such that the maximum dimension of any opening does not exceed 2 inches (50.8 mm).

**Exception:** The provisions of this section shall not apply to sliding glass doors which conform to the provisions of Section 6710 or to view ports or windows which do not exceed 2 inches (50.8 mm) in their greatest dimension.

## SECTION 6714 GLAZING

In Group B, F, M, S Occupancies, panes of glazing with at least one dimension greater than 6 inches (152.4 mm), but less than 48 inches (1219.2 mm), shall be constructed of fully tempered glass or approved burglary-resistant material or shall be protected by metal bars or grilles which are constructed to preclude human entry. Such bars or grilles shall have a pattern such that at least one dimension of any opening shall be no greater than 6 inches (152.4 mm).

## SECTION 6715 WINDOWS

**6715.1.** Sliding glass windows shall be provided with locking devices and shall be so constructed and installed that they remain intact and engaged when subjected to the tests specified in Section 6717.2. A device shall be installed in the upper channel of the moving panel to prohibit the raising and removal of the moving panel from the track while in the closed or partially open position.

**6715.2.** Other openable windows shall be provided with substantial locking devices which render the building as secure as the devices required by this section. In Group B, F, M, S Occupancies, such devices shall be glide bars, bolts, cross bars and/or padlocks with minimum  $\frac{9}{32}$  inch (7.13 mm) hardened steel shackles and bolted, hardened steel hasps.

**6715.3 Special.** Louvered windows shall be protected by metal bars or grilles which are constructed to preclude human entry. Such bars or grilles shall have a pattern such that no less than one dimension of any opening shall be 6 inches (152.4 mm) or less.

**6715.4.** Any release for metal bars, grilles, grates or similar devices constructed to preclude human entry that are installed shall be located on the inside of the adjacent room and at least 24 inches (609.6 mm) from the closest opening through such

## SECURITY PROVISIONS

metal bars, grilles, grates or similar devices that exceed 2 inches (50.8 mm) in any dimension.

**Exception:** Metal bars, grilles, grates or similar devices may be padlocked in position where such padlocks or similar devices are not prohibited by law.

### SECTION 6716 OPENINGS OTHER THAN DOORS OR GLAZED OPENINGS

**6716.1.** Security openings other than doors or glazed openings shall be protected in accordance with the requirements of this section.

**6716.2.** Hatchway covers of less than  $1\frac{3}{4}$  inch (44.45 mm) thick solid wood construction shall be covered on the inside with 16-gauge sheet metal attached by screws around the perimeter spaced at 6 inch (152.4 mm) maximum centers.

**6716.3.** Hatchway covers shall be secured from the inside with slide bars, slide bolts, and/or padlocks with hardened steel shackles. Hasps shall be hardened steel and bolted.

**6716.4.** Outside pin-type hinges shall be provided with non-removable pins.

**6716.5.** Openings within 40 inches (1016 mm) of the required locking device of the door when said door is in the closed and locked position and when said door is operable without the use of a key shall not exceed 2 inches (50.8 mm) in their greatest dimension or shall be protected by metal bars or grilles having a pattern such that the openings of which do not exceed 2 inches (50.8 mm) in the greatest dimension.

**6716.6.** All other openings shall be protected by metal bars or grilles constructed to preclude human entry. Such bars or grilles shall have a pattern such that no less than one dimension of any opening shall be six inches or less.

**Exception:** Openings which are more than 40 inches (1016 mm) from the required locking device of a door in the closed and locked position when the door is operable from the inside without the use of a key, and which do not exceed 96 square inches (.061 m<sup>2</sup>) in area, with no less than one dimension thereof being 6 inches (152.4 mm) or less.

### SECTION 6717 TESTS – GENERAL

Doors, windows, and similar closures of security openings regulated by the provisions of this Chapter, including the frames, jambs, hardware and locking devices of such closures, shall be shown to satisfactorily pass the tests specified in this Chapter. The tests shall be performed by an approved testing laboratory on the units as installed at the jobsite or installed in test assemblies constructed according to the manufacturer's details. Each typical job installation shall be tested or the units shall be constructed and installed in conformance to a General Approval issued by the Department.

**6717.1 Sliding glass doors.** Panels shall be closed and locked. Tests shall be performed in the following order:

1. **Test A.** With the panels in the normal position, a concentrated load of 300 pounds shall be applied separately to each vertical pull stile incorporating a locking device at a point on the stile within 6 inches (152.4 mm) of the locking device in the direction parallel to the plane of glass that would tend to open the door.
2. **Test B.** Repeat Test A while simultaneously adding a concentrated load of 150 pounds to the same area of the same stile in a direction perpendicular to the plane of glass toward the interior side of the door.
3. **Test C.** Repeat Test B with 150-pound force in the reverse direction toward the exterior side of the door.
4. **Tests D, E and F.** Repeat Tests A, B and C with the movable panel lifted upwards to its full limit within the confines of the door frame.
5. Moveable panels shall not be rendered easily openable or removable from the frame during or after the tests or the panel shall have failed the test.

**6717.2 Sliding glass windows.** Sash shall be closed and locked. Tests shall be performed in the following order:

1. **Test A.** With the sliding sash in the normal position, a concentrated load of 150 pounds shall be applied separately to each sash member incorporating a locking device at a point on the sash member within 6 inches (152.4 mm) of the locking device in the direction parallel to the plane of glass that would tend to open the window.
2. **Test B.** Repeat Test A while simultaneously adding a concentrated load of 75 pounds to the same area of the same sash member in the direction perpendicular to the plane of glass toward the interior side of the window.
3. **Test C.** Repeat Test B with the 75 pound force in the reversed direction toward the exterior side of the window.
4. **Tests D, E and F.** Repeat Tests A, B and C with the movable sash lifted upwards to its full limit within the confines of the window frame.
5. Movable panels shall not be rendered easily openable or removable from the frame during or after the tests or the panel shall have failed the test.

## CHAPTER 70

# GRADING, EXCAVATIONS AND FILLS

### SECTION 7001 PURPOSE

The purpose of this Chapter is to safeguard life, limb, property and the public welfare by regulating grading on private property.

### SECTION 7002 SCOPE

All grading shall be performed in accordance with the provisions of this Chapter and with rules and regulations as established by the Superintendent of Building, and shall be in accordance with the zoning, private street and division of land regulations contained in Chapter I of the *Los Angeles Municipal Code*, and the requirements of the approved General Plan for the area in which the grading is to be done.

### SECTION 7003 DEFINITIONS

For the purposes of this Chapter the definitions listed hereunder shall be construed as specified in this section.

**APPROVAL.** The proposed work or completed work conforms to this chapter to the satisfaction of the Superintendent of Building.

**AS-GRADED.** The extent of surface conditions on completion of grading.

**BEDROCK.** In-place solid rock.

**BENCH.** A relatively level step excavated into earth material on which fill is to be placed.

**BORROW.** Earth material acquired from an on-site or off-site location for use in grading on a site.

**CIVIL ENGINEER.** A professional engineer registered in the state to practice in the field of civil engineering works.

**CIVIL ENGINEERING.** The application of the knowledge of the forces of nature, principles of mechanics and the properties of materials to the evaluation, design and construction of civil works.

**COMPACTION.** The densification of a fill by mechanical means. **EARTH MATERIAL.** Any rock, natural soil, fill, or combination thereof. **ENGINEERING GEOLOGIST.** A geologist duly licensed by the State of California and experienced and knowledgeable in engineering geology.

**ENGINEERING GEOLOGY.** The application of geologic knowledge and principles in the investigation and evaluation of naturally occurring rock and soil for use in the design of civil engineering works.

**EROSION.** The wearing away of the ground surface as a result of the movement of wind, water or ice.

**EXCAVATION.** The mechanical removal of earth material.

**FILL.** A deposit of earth material placed by artificial means.

**GEOTECHNICAL ENGINEER.** See “soils engineer.”

**GRADE.** The vertical location of the ground surface.

**Existing Grade.** The grade prior to grading.

**Finish Grade.** The final grade of the site which conforms to the approved plan.

**Rough Grade.** The stage at which the grade approximately conforms to the approved plan.

**GRADING.** Any excavating or filling or combination thereof.

**HILLSIDE AREAS.** Any land designated as a Hillside Area based on the latest Bureau of Engineering Basic Grid Map No. A-13372 and made part of this section.

**KEY.** A designed compacted fill placed in a trench excavated in earth material beneath the toe of a proposed fill slope.

**PROFESSIONAL INSPECTION.** The inspection required by this Code to be performed by the civil engineer, soils engineer or engineering geologist. Such inspections include that performed by persons supervised by such engineers or geologists and shall be sufficient to form an opinion relating to the conduct of the work.

**ROCK.** Any consolidated or coherent and relatively hard natural formed mass of mineral material.

**SEEPAGE.** The flow of water through earth material caused by gravitational forces.

**SITE.** Any lot or parcel of land or contiguous combination thereof, under the same ownership, where grading is performed or permitted.

**SLOPE.** An inclined ground surface the inclination of which is expressed as a ratio of horizontal distance to vertical distance. Slope greater than 10 percent shall be considered as a sloping surface.

**SLOPE FAILURE, Class I.** Involves bedrock, and a combined geologic and geotechnical report need to be submitted to address its cause and to provide recommended repair methods.

**SLOPE FAILURE, Class II.** Involves soil, and a geotechnical report needs to be submitted to address its cause and to provide recommended repair methods.

**SLOPE FAILURE, Class III.** Involves surficial problems, and unless determined as necessary by Inspection, neither a geologic nor a geotechnical report is required prior to the repair.

**SOIL.** Naturally occurring superficial deposits overlying bedrock.

**SOILS ENGINEER (GEOTECHNICAL ENGINEER).** A civil engineer duly licensed by the State of California who is experienced in the application of the principles of soil

mechanics in the investigation, evaluation and design of civil works involving the use of earth materials.

**SOILS ENGINEERING (GEOTECHNICAL ENGINEERING).** The application of the principles of soils mechanics in the investigation, evaluation and design of civil engineering works involving the use of earth materials and the inspection or testing of the construction thereof.

**TERRACE.** A relatively level step constructed in the face of a graded slope surface for drainage and maintenance purposes.

#### SECTION 7004 GRADING DESIGNATION

Grading in designated hillside areas or in excess of 5,000 cubic yards (3825 m<sup>3</sup>) of either cut or fill, or a combination thereof, shall be performed in accordance with the approved grading plan prepared by a civil engineer, and shall be designated as “**engineered grading**”. Grading involving less than 5,000 cubic yards (3825 m<sup>3</sup>) in a non-hillside area shall be designated “**regular grading**” unless the permittee chooses to have the grading performed as engineered grading, or the Superintendent of Building determines that special conditions or unusual hazards exist, in which case grading shall conform to the requirements for engineered grading.

#### SECTION 7005 GENERAL REQUIREMENTS

**7005.1 Hillside areas.** No person shall conduct any grading operation for other than building site development in hillside areas.

**Exception:** Grading which is not connected with building site development may be conducted in hillside areas when the Department finds that such work enhances the physical stabilization of property, or is not detrimental to public health, safety or welfare, and is in conformity with the approved master plan for the area. A tentative tract or division of land map shall also not be required for such exempt grading.

**7005.2 Building foundations.** Building foundations and temporary shoring shall be designed and constructed as specified in Chapter 4 of the *Los Angeles Residential Code* or in Chapter 18 and Chapter 33 of this Code.

**7005.3 Removal of ground cover.** The existing vegetative ground cover of any watershed in any hillside area shall not be destroyed, removed or damaged except pursuant to lawful grading, use or occupancy of the property. Except for California native oak, bay, black walnut and sycamore trees regulated by the provisions of Article 7 of Chapter I or Article 6 of Chapter IV of the LAMC, removal of trees and shrubbery will be allowed where such work will not disturb the turf, sod or other existing vegetative ground cover. Whenever such ground cover is removed or damaged pursuant to a grading permit, the permittee shall restore and maintain approved ground cover, or shall accomplish such other erosion control protection as is required. Such erosion control shall be com-

pleted within 30 days after cessation of the grading work where no valid building permit is in effect for the site.

**7005.4 Exceptions for emergencies.** The provisions of this Code shall be temporarily waived for any grading operation which is conducted during a period of emergency disaster and which is directly connected with or related to relief of conditions caused by such emergency or disaster. This emergency exception shall not be construed to waive compliance with the provisions of this Code subsequent to the emergency or disaster.

**7005.5 Cemetery interment sites.** Cemetery interment sites shall not be located on slopes steeper than one unit vertical in three units horizontal (33.3 percent slope), provided further, where interment sites are located adjacent to slopes steeper than one unit vertical in two units horizontal (50 percent slope), the site shall not be located closer to the face of such slopes than a one unit vertical in two units horizontal (50 percent slope) imaginary plane projected up from the toe of the slope.

**Exception:** Encroachment of the interment sites beyond the imaginary plane may be permitted, provided it can be shown to the Department’s satisfaction through investigation and report by both a soils engineer and an engineering geologist that the underlying bedrock and the materials on the slope have strength characteristics sufficient to provide a stable soil with a minimum factor of safety of not less than 1.5 static loads.

No permit shall be required for preparing an area for planting of lawn or landscaping in a cemetery, provided the resulting maximum slope of one unit vertical in three units horizontal (33.3 percent slope) is maintained and there is no change to the existing drainage pattern.

The Department may waive or reduce the requirements of Sections 7012 and 7013 of this Code for planting, irrigation, erosion control and drainage devices for portions of a cemetery graded or to be graded with a maximum slope of one unit vertical in three units horizontal (33.3 percent slope) if the applicant shows to the Department’s satisfaction that slope erosion and drainage will be controlled entirely within the boundaries of the property which is dedicated, used or to be used for cemetery purposes.

**7005.6 Maintenance of protective devices.** The owner of any property on which an excavation or fill has been made pursuant to a permit granted under Chapter 1 of this Code or any other person or agent in control of such property, shall maintain in good condition and repair all retaining walls, cribbing, drainage structures and other protective devices, on said property, as shown on the approved plans and specifications submitted with the application for a permit.

**7005.7 Hazardous soil and earth conditions.** Whenever the Department determines by inspection that any land or any existing excavation or fills have, from any cause, become a menace to life or limb, or endangers public or private property, or affects the safety, usability or stability of public or private property, the owner or other person in legal control of the property concerned shall, upon receipt of a written notice thereof from the Department, correct such condition in accordance with the provisions of this chapter and the requirements and conditions set forth in the notice so as to eliminate



the hazardous condition. The owner or other person in legal control of the property shall immediately comply with the provisions set forth in the notice and shall complete the work within 180 days from the date of the notice unless a shorter period of time for completion has been specified in the notice in which case the owner shall comply with the shorter period of time. Upon written application therefor, the Department may approve the request for an extension of time to complete the work required by notice.

If the above condition is not eliminated within the specified time period, the Department shall file with the Office of the County Recorder a certificate stating that the property is substandard and that the owner thereof has been so notified. The certificate shall specify the conditions creating the substandard classification.

When the above conditions have been corrected to the Department's satisfaction, upon receiving a \$60 fee from the owner or his or her agent, the Department shall file with the Office of the County Recorder a certificate specifying that the conditions creating the substandard classification have been corrected and that the property is no longer considered substandard.

#### **7005.8 Violations.**

**7005.8.1 General.** No person shall fail, refuse or neglect to comply with the following provisions:

1. All orders issued by the Department pursuant to the provisions of this chapter;
2. All conditions imposed on grading permits pursuant to the provisions of this chapter; and
3. All rules and regulations of the Department with respect to grading which are in effect at the time the grading permit is issued.

Any person violating the above shall be guilty of a misdemeanor.

**7005.8.2 Noncompliance fee.** See Section 98.0411 of the LAMC.

**7005.9 Nonconforming sites.** All new buildings and additions to existing buildings shall conform to the provisions of the Code as follows:

1. Whenever a new principal building is constructed on a site, the entire site shall be made to conform to the provisions of this Chapter and Chapter 18 of this Code.
2. Whenever the principal building on the site is added to, altered or repaired in excess of 50 percent of its replacement value, the entire site shall be made to conform to the provisions of this Chapter and Chapter 18 of this Code.

### **SECTION 7006 CONDITIONS PRECEDENT TO ISSUING A GRADING PERMIT**

**7006.1 Plans and specifications.** Application for a grading permit shall be accompanied by plans and specifications prepared and signed by an individual licensed by the State to

prepare such documents. Plans shall be drawn to appropriate scale upon substantial paper or cloth and shall be of sufficient clarity to indicate the nature and extent of the work proposed and show in detail that they will conform to the provisions of this Code and all relevant laws, ordinances, rules and regulations.

The first sheet of each set of plans shall give location of the work, the name and address of the owner and the person by whom they were prepared.

The plans shall include, but not be limited to, the following information:

1. General vicinity of the proposed site.
2. Property limits and accurate contours of existing ground and details of terrain and area drainage.
3. Limiting dimensions, elevations or finish contours to be achieved by the grading, and proposed drainage channels and related construction.
4. Detailed plans of all surface and subsurface drainage devices, walls, cribbing, dams and other protective devices to be constructed with, or as a part of, the proposed work together with a map showing the drainage area and the estimated runoff of the area served by any drains.
5. Location of any buildings or structures on the property where the work is to be performed and the location of any buildings or structures on land of adjacent owners which are within 15 feet (4572 mm) of the property or which may be affected by the proposed grading operations.
6. The location of the top and toe of all cuts and fills, the location of all "daylight" lines, the amount of cut and fill, the location of disposal site for excess material, if known, and the estimated dates for starting and completing grading work.
7. When reports are required pursuant to LAMC Subsection 7006.2, recommendations included in the approved soils engineering report and engineering geology report shall be incorporated into the grading plans. A copy of the soils report, geological report, and Department letter approving such reports shall be attached to the approved set of grading plans and kept at the job site.
8. When reports are required pursuant to Section 7006.2, the dates of the soils engineering and engineering geology reports together with the names, addresses and phone numbers of the firms or individuals who prepared the reports shall be incorporated in the grading plans.

The Department may require some plans to be prepared by a licensed surveyor when the property location and its limits are not clear. Portions of the aforementioned plan requirements may be waived by the Department if it finds that the information on the application and/or submitted plans is sufficient to show that the work will conform to the provisions of this Code and other relevant laws.

**7006.2 Report requirement.** Reports shall be submitted to the Department for review and approval in, but not limited to, the following circumstances:

1. Soils and/or geological reports are required when they are stipulated in a Grading Preinspection Report prepared as directed by the Department.
2. Soils and geological reports are required for all grading work in excess of 5,000 cubic yards (3825 m<sup>3</sup>) of cut or fill, or a combination thereof.
3. Soils reports are required when the design of the foundations does not conform to the requirements of Chapter 18 of this Code.
4. Soils and/or geological reports may be required when previously unknown adverse soils or geologic conditions are revealed during construction.
5. Soils and/or geological reports may be required to evaluate liquefaction, slope instability and surface ground rupture resulting from earthquake motions in accordance with CBC Section 1803.

The Superintendent of Building may require a geotechnical investigation in accordance with CBC Section 1803.2 to address the potential of liquefaction when, during the course of an investigation, all of the following conditions are discovered:

1. Shallow ground water, 50 feet (1524 m) or less.
2. Unconsolidated sandy alluvium.

**7006.3 Report content.**

**7006.3.1 Soils engineering report.** The soils engineering report required by Section 7006.2 shall include data regarding the nature, distribution and strength of existing soils, conclusions and recommendations for grading procedures and design criteria for corrective measures, including buttress fills, when necessary, and opinion on adequacy for the intended use of sites to be developed by the proposed grading as affected by soils engineering factors, including the stability of slopes.

**7006.3.2 Engineering geology report.** The engineering geology report required by Section 7006.2 shall include an adequate description of the geology of the site, conclusions and recommendations regarding the effect of geologic conditions on the proposed development, and opinion on the adequacy for the intended use of sites to be developed by the proposed grading, as affected by geologic factors.

In addition, all soils engineering and engineering geology reports for grading work in hillside areas shall also comply with rules and standards established by the Department.

**7006.4 Hillside exploratory work.** Surface and subsurface exploratory work shall be performed by a soils engineer and an engineering geologist on all hillside grading work. This exploratory work shall conform to the rules and regulations for hillside exploratory work established by the Superintendent of Building. The Department may waive this requirement when it determines from the application and site conditions that the proposed grading will conform to the provisions of this Code.

No person shall conduct any grading operation for the access of exploration equipment unless the Department has approved a plan signed by the soils engineer and/or geologist showing the extent of access grading and how the site is to be restored after exploration.

**7006.5 Bonds in hillside areas required.** The Superintendent of Building may require bonds in such form and amounts as may be deemed necessary to assure that the work, if not completed in accordance with the approved plans and specifications, will be corrected to eliminate hazardous conditions.

**7006.5.1 Surety bond.** Before a permit is issued for excavation or fill of 250 cubic yards (13 m<sup>3</sup>) or more of earth in a hillside area, the owner of the property shall file with the Department a bond for the benefit of the City. The bond shall be executed by the owner and a corporate surety authorized to do business in this state as a surety in an amount sufficient to cover the entire project.

**Exception:** Upon application by the owner, the Department may waive this requirement if:

1. The proposed grading is neither actually nor potentially hazardous;
2. The grading work performed is in compliance with a Department order; or
3. The applicant can substantiate, to the satisfaction of the Department, that the work under a grading permit will be fully executed.

**7006.5.2 Cash bond.** In lieu of a surety bond, the owner may file a cash bond with the Department on the same terms and conditions and in an amount equal to that which would be required in the surety bond. The deposit may be in the form of negotiable United States securities in lieu of cash.

**7006.5.3 Application of bond to adjacent property.** Where grading is required on property adjacent to the grading site under permit in order to complete a project satisfactorily, the owner of such adjacent property need not provide an additional grading bond if the original bond is of sufficient amount to include such additional grading.

**7006.5.4 Conditions of the bond.** Every bond shall be conditioned such that the owner shall:

1. Comply with all applicable provisions of this Code and all other applicable laws;
2. Comply with all of the terms and conditions of the grading permit to the satisfaction of the Department;
3. Complete all of the work described by the permit, and the plans and specifications relating thereto, within the time limit specified in the permit. Upon application by the permittee, the Department, or the Board, in case an appeal is made to it pursuant to Section 98.0403 of the *Los Angeles Municipal Code*, may, for sufficient cause, extend the time specified in the permit, but no such extension shall release any surety on the bond.
4. Install temporary erosion control devices when required to do so by the provisions of this Code.

**7006.5.5 Period and termination of bond.** The term of each bond shall begin on the date of filing and shall remain in effect until the work is completed to the satisfaction of the Department or until replaced by a new bond in the event of a change of ownership. In the event of failure to complete the work and/or failure to comply with all of the conditions and terms of the permit, the Department may order some or all of the work to be completed to correct any hazardous conditions. The surety executing such bond, or such deposit, shall continue to be firmly bound under a continuing obligation for the payment of all necessary costs and expenses that may be incurred or expended by the City in causing any and all of such required work to be done and that said surety or the depositor assents to any lawful extension of time within which to construct and complete such work. Such costs shall include an amount equal to the cost to the City of administering the contract and supervising the work required. In the case of a cash bond, the deposit, or any unused portion thereof, shall be refunded to the depositor upon completion of the work to the satisfaction of the Department. The Department may release or exonerate the bond under appropriate conditions when the public health and welfare is not jeopardized.

**7006.5.6 New ownership.** In the event of change of ownership during grading, the new owner shall secure a new grading permit and post a new bond to ensure completion of the grading.

**7006.5.7 Amount of bond.** The amount of the bond shall be based on the number of cubic yards of material in either excavation or fill, whichever is the greater amount, and in addition shall include the cost of all drainage or other protective devices such as, but not limited to retaining walls, as may lawfully be required. That portion of the bond valuation covering the cost of excavation or fill shall be computed as follows:

250 to 10,000 cubic yards	\$1,000, plus \$1.00 per cubic yard
10,001 to 100,000 cubic yards	\$11,000, plus 50 cents per cubic yard for each additional cubic yard in excess of 10,000
Over 100,000 cubic yards	\$56,000, plus 35 cents per cubic yard for each additional cubic yard in excess of 100,000

For SI: 1 cubic yard = 0.765 m<sup>3</sup>.

**7006.5.8 Installment refunds.** When a substantial portion of the required grading work has been completed to the satisfaction of the Department, and when the completion of the remaining grading work, site development or planting is delayed, the Department may accept the completed portion of the grading work and consent to the proportionate reduction of the bond to an amount estimated to be adequate to ensure completion of the grading work, site development or planting remaining to be performed. Only one such reduction shall be considered for each bond posted.

**7006.5.9 Entry upon premises.** The Department, the Board of Public Works, the surety company, or their duly

authorized representative, shall have access to the premises described in the permit for the purpose of inspecting the progress of the work.

In the event of default in the performance of any terms or conditions of the permit, the surety or any person employed or engaged on his or her behalf shall have the right to go upon the premises to complete the required work, including the installation of temporary erosion control devices.

Should the permittee or the surety fail to perform the work described by the permit and the plans and specification relating thereto or required by any applicable law, and it is determined by either the Department or the Board of Public Works that the public health, safety or general welfare is endangered by such failure, the Department, the Board of Public Works, or the representative of either may enter upon the premises to perform all or any part of such work, including the installation of temporary erosion control devices.

It shall be unlawful for the owner or any other person to interfere with the ingress and egress from such premises of any authorized representative or agent of any surety company or the city engaged in the work ordered by the Department or the Board of Public Works.

**7006.6 Consent of adjacent property owner.** Whenever any excavation or fill requires entry onto adjacent property for any reason, the permit applicant shall obtain the written consent of the adjacent property owner or the owner's authorized representative, and shall file a copy of said consent with the Department before a permit for such grading work may be issued. The signature on such written consent shall be notarized.

In the event contours on adjacent properties are permanently changed, structures or drainage devices are added or modified, and/or the work done requires a grading permit under Section 106.1.2, a separate permit shall be required for each such affected adjoining property in addition to the consent letter. Furthermore, the adjacent property owner shall acknowledge his or her consent on plans showing such work. The consent letter will not be required if the adjoining owner obtains a grading permit.

#### **7006.7 Limitation of export and import.**

**7006.7.1 Export-import defined.** As used in this chapter, the term "export" and its derivatives shall be defined as the earth, brush or similar materials transported from a grading site. The term "import" and its derivatives shall be defined as earth, brush or similar materials transported to a grading site.

**7006.7.2 General conditions.** The Department may designate routes of ingress and egress and may impose such conditions and require such safety precautions for pedestrian and vehicular traffic as it determines are required in the interest of public health, safety and welfare.

The imposed conditions may include, but are not limited to:

1. Restricting the size and type of hauling equipment.

2. Requiring traffic control device, flaggers, and signs and markers at appropriate locations along the designated routes as provided in the City of Los Angeles Department of Public Works and Traffic pamphlet, "Work Area Traffic Control Handbook", 1990 Edition, or latest subsequent revisions.
3. Establishing a temporary "no parking" area authorized by the General Manager of the Transportation Department when determined to be necessary.
4. Securing all loads by trimming, watering or other appropriate means to prevent spillage and dust.

**7006.7.3 Subdivision conditions.** All conditions of import and export imposed in the approval of a tentative tract map shall be made a part of the grading permit.

**7006.7.4 Baseline Hillside Ordinance conditions.** All conditions of import and export imposed in the approval of the project with respect to the Baseline Hillside Ordinance shall be made a part of the grading permit.

**7006.7.5 Special Hillside conditions.** No permit requiring the import or export of more than 1,000 cubic yards (764 m<sup>3</sup>) shall be issued for areas designated "hillside" except as specified in this section. A fee of \$529.00 for the first 1,000 cubic yards and \$100.00 additional for each 1,000 cubic yards or portion of 1,000 cubic yards, in addition to the permit fee shall be paid for processing an application for grading under the provisions of this section.

1. The applicant shall submit a proposed method of hauling, which shall include the location of borrow and/or dispersal sites within the hillside area, the truck staging areas, the portion of the haul route within the hillside area and extending to or from a major or secondary highway, the maximum gross weight of haul vehicles when loaded and other information as may be required by the Departments of Building and Safety, Transportation and Public Works. In addition, the applicant shall submit a copy of the soil/geological report approval letter when reports are required pursuant to Section 7006.2, a vicinity map, and a list of affected property owners to be notified of the public hearing pursuant to Item 4.
2. The Department shall immediately forward a copy of the hauling proposal to the Department of Public Works which shall review same to determine the effect of the proposed hauling operation on the structural integrity of the public streets, on public safety due to street alignment, width and grade, and on public health and welfare due to noise and vibration as it may affect private property situated on or adjacent to the haul route within the hillside area.

The Department of Public Works shall collect a fee and may require a bond as specified in Article 2, Chapter VI of the LAMC. The Department of Public Works may, within 21 days after receipt of the proposal, recommend conditions to be imposed on the hauling operations to protect the public health, safety and welfare in the respects hereinabove specified.

3. The Department shall also immediately forward a copy of the hauling proposal to the Department of Transportation which shall review same to determine the effect thereof on vehicular and pedestrian traffic in the affected area. The Department of Transportation may, within 21 days after receipt of the proposal, recommend any traffic control measures deemed necessary to protect the public health, safety and welfare.
4. The Department shall within 45 days after receipt of the proposed method of hauling, schedule a public hearing before the board provided that any environmental document required pursuant to the provisions of the California Environmental Quality Act has been completed and that the soils/geology report for the project, if required pursuant to LAMC Subsection 7006.2, has been reviewed and approved by the Department's Grading Division.

The Department shall give notice of the time, place and purpose of the hearing as follows:

- a. by publishing a notice in at least one publication of general circulation in the City, designated for that purpose by the City Clerk, not less than ten days prior to the date of the hearing; and
  - b. by mailing a written notice at least ten days prior to the date of the hearing to the owner or owners of the property involved, and to the owners of all properties within 300 feet (44 m) of the exterior boundaries of the site for which the grading permit has been requested using, for the purpose of notification, the last known name and address of owners as are shown on the records of the City Engineer or the records of the County Assessor; and
  - c. by the applicant posting notice of the public hearing in a conspicuous place and in clear public view on the property involved at least five days prior to the date of the public hearing.
5. At the public hearing, the Board shall consider the views of the applicant and all other affected persons. The Board shall then grant or conditionally grant approval of export and import operations or, in the event it determines that the grading activity, including the hauling operation, will endanger the public health, safety and welfare, it shall deny the request. Where conditions of the permit are recommended by the Department of Public Works, including the condition that a bond be posted pursuant to LAMC Section 62.202, such conditions shall be made a part of any permit that may be issued. The decision of the Board shall not be effective until 10 calendar days have elapsed from the date of the Board's decision.
  6. Any affected person, including the applicant, who is dissatisfied with the decision of the Board, may appeal the Board decision within ten days to the City

Council by filing an appeal with the City Clerk. The City Council shall hear and make its determination on the appeal not later than the 30th day after the appeal has been filed. The decision of the City Council on the matter shall be final. If the City Council fails to act on any appeal within the time limit specified in this section, the action of the Board on the matter shall be final.

7. The provisions of this section shall not apply to applications for permits which apply to export or import operations which have been approved in accordance with LAMC Section 17.13.

#### **7006.8 Conformance with zoning regulations required.**

**7006.8.1 Subdivision map act.** No permit shall be issued for any grading or import or export of earth materials to or from any grading site except in compliance with the zoning, private street and division of land regulations contained in Chapter I of the LAMC, the Subdivision Map Act of the State of California and the approved master plan for the area in which the grading is to be done.

**7006.8.3 Baseline hillside ordinance.** No grading permit shall be issued for the import or export of earth materials to or from and no grading shall be conducted on any grading site in hillside ordinance areas unless the Building Permit has been approved in compliance with the Baseline Hillside Ordinance.

**Exception:** The requirements of this section shall not apply to any grading that is determined by the Department to be Remedial Grading as defined in Section 12.03.

### **SECTION 7007 SAFETY PRECAUTIONS DURING GRADING**

If at any stage of work on an excavation or fill the Department determines that further work as authorized by an existing permit is likely to endanger any property or public way, the Department may require as a condition to allow the work to continue that plans for such work be amended to include adequate safety precautions. Safety precautions may include, but shall not be limited to, specifying a flatter exposed slope or construction of additional drainage facilities, berms, terracing, compaction, cribbing, retaining walls or buttress fills, slough walls, desilting basins, check dams, benching wire mesh and guniting, rock fences revetments or diversion walls.

No person shall excavate or fill so as to cause falling rocks, soil or debris in any form to fall, roll, slide or flow onto adjoining properties.

**7007.1 Restriction of work during rainy season.** The period between October 1 and April 15 is hereby determined to be the period in which heavy rainfall normally occurs in the City and is declared to be the "rainy season". During this period no grading work in excess of 200 cubic yards (153 m<sup>3</sup>) shall be commenced on any single grading site under permit until an erosion control system has been approved and it has been demonstrated to the Department's satisfaction that such grading work will not endanger life, limb, health, property or public welfare.

Whenever it appears that repair work to rectify substandard conditions and any grading project previously commenced pursuant to a permit issued by the Department will not be completed prior to the commencement of the rainy season, the Department may order and the permittee shall install temporary erosion control devices to protect the persons and property near such project. In addition, the Board of Public Works may direct the permittee to comply with the provisions of LAMC Section 61.02.

All hillside property owners or their agents shall submit erosion control plans to their district grading inspectors prior to October 1 for grading projects with unfinished grading work in excess of 200 cubic yards (153 m<sup>3</sup>) and sites with substandard conditions, unless specifically exempted by the grading inspectors.

**7007.2 Duration of work.** No person shall conduct any grading excavation or filling, including the export or import of earth material, between the hours of 6:00 p.m. and 7:00 a.m. on any day nor on Sunday at any time, except in emergencies as provided in Section 7005.4.

### **SECTION 7008 PROFESSIONAL INSPECTION AND CERTIFICATION FOR ENGINEERED GRADING**

Grading operations, as indicated in Section 108.9, for which a permit is required shall be subject to inspection by the Department. Professional inspection of grading operations shall be provided by the civil engineer, soils engineer and the engineering geologist retained to provide such services in accordance with Section 7008.6 for engineered grading and as required by the Department for regular grading.

**7008.1 Civil engineer.** The civil engineer shall provide professional inspection within such engineer's area of technical specialty, which shall consist of observation and review as to the establishment of line, grade and surface drainage of the development area. If revised plans are required during the course of the work, they shall be prepared by the civil engineer.

Upon completion of hillside tract grading, grading work in excess of 5,000 cubic yards (3825 m<sup>3</sup>) of either cut or fill, or a combination thereof, and other grading work if deemed warranted by the Department, the civil engineer or land surveyor responsible for the design shall submit a dated as-graded plan to the Department for approval of all work covered by the grading permit(s) and shall include the following:

1. The plan shall be no more than 1 inch equals 40 feet scale (25 mm equals 12 192 mm scale) and shall show the locations of streets, pads, slopes, structures, pertinent elevations, original contours and finished elevations, and other pertinent information required to accurately show the as-graded condition.
2. The plan shall bear the signature of the design civil engineer or land surveyor certifying he or she has inspected the site, prepared the as-graded plans and that the work within his or her area of responsibility was done in accordance with the final approved grading plan.

**7008.2 Soils engineer.** The soils engineer shall provide professional inspection within such engineer's area of technical specialty, which shall include observation during grading and testing for required compaction. The soils engineer shall provide sufficient observation during the preparation of the natural ground and placement and compaction of the fill to verify that such work is being performed in accordance with the conditions of the approved plan and the appropriate requirements of this chapter. Revised recommendations relating to conditions differing from the approved soils engineering and engineering geology reports shall be submitted to the owner, the Department and the civil engineer.

The soils engineer, at the completion of hillside tract grading, grading work in excess of 5,000 cubic yards (3825 m<sup>3</sup>) of either cut or fill, or a combination thereof, and other grading work if deemed warranted by the Department, shall submit a final report. The final report shall include:

1. His or her professional opinion of the suitability of the fill material and their placement, and the ability of the natural materials to support the compacted fill without excessive settlement of the fill or potential damage to structures erected thereon;
2. The results of all in-place density tests;
3. A statement that all subdrains were inspected prior to backfill;
4. A statement to the effect that the soils engineers has inspected all cuts and fills and that in his or her opinion they meet the design requirements; and
5. All locations of the in-place density tests, retaining walls, subdrains and cut/fill slopes shall be shown on a plot plan which may be referenced to a dated as-graded plan prepared by the design civil engineer or land surveyor.

**7008.3 Engineering geologist.** The engineering geologist shall provide professional inspection within such geologist's area of technical specialty, which shall include professional inspection of the bedrock excavation to determine if conditions encountered are in conformance with the approved report. Revised recommendations relating to conditions differing from the approved engineering geology report shall be submitted to the soils engineer and the Department.

For hillside tract grading, grading work in excess of 5,000 cubic yards (3825 m<sup>3</sup>) of either cut or fill, or a combination thereof, and other grading work if deemed warranted by the Department, geologists shall submit periodic in-grading inspection reports at intervals determined by the Department. In addition, the engineering geologist at the completion of grading shall submit a final geological report stating he or she had maintained the required in-grading inspection, the recommendations of his or her pregrading report(s) have been followed, that in his or her professional opinion all known adverse geologic conditions have been corrected or provided for, future adverse geologic conditions are not anticipated, and all lots or sites are geologically suitable and safe for construction.

The final report shall include the geologist's certification that he or she has inspected all cut slopes and sidehill fill

placement areas prior to placement of fill. The engineering geologist shall also certify that all subdrain placement areas were inspected prior to installation of the subdrains. The final report shall be referenced to a dated as-graded plan prepared by the design civil engineer or land surveyor.

**7008.4 Grading contractor.** For hillside tract grading, grading work in excess of 5,000 cubic yards (3825 m<sup>3</sup>) of either cut or fill, or a combination thereof, and other grading work if deemed warranted by the Department, the grading contractor shall submit in a form prescribed by the Superintendent of Building a statement of conformance to the as-built plan and the specifications.

**7008.5 Transfer of responsibility.** If, for any reason, the civil engineer, the soils engineer, or the engineering geologist of record is terminated during the progress of the grading work, he or she and the owner shall immediately notify the Department in writing.

Such transfer of responsibility may result in temporary delays in the grading operations until satisfactory arrangements are made to assure the Department that competent professional supervision is provided. The new professional(s) shall submit to the Department a letter of responsibility that the previous professional's designs, reports and recommendations have been reviewed and all provisions of the Department required as conditions of the grading permit will be complied with during the course of the work.

**7008.6 Owner.** The owner shall be responsible for the work to be performed in accordance with the approved plans and specifications and in conformance with the provisions of this Code, and the owner shall engage consultants, if required, to provide professional inspections on a timely basis. The owner shall provide a Registered Deputy Grading Inspector as required by Section 1701. The owner shall act as a coordinator between the consultants, the contractor and the Superintendent of Building. In the event of changed conditions, the owner shall be responsible for informing the Superintendent of Building of such change and shall provide revised plans for approval. The Department may require the submittal of a supplemental soils and/or geological report justifying such change.

**7008.7 Notification of noncompliance.** If, in the course of fulfilling their respective duties under this chapter, the civil engineer, the soils engineer or the engineering geologist finds that the work is not being done in conformance with this chapter or the approved grading plans, the discrepancies shall be reported immediately in writing to the owner and to the Grading Division of the Department.

## SECTION 7009 PROFESSIONAL INSPECTION FOR REGULAR GRADING

When soils and/or geological reports are submitted to the Department per Section 7006.2, professional inspection for regular grading work may be required by the Department and so stipulated on a Department letter approving such reports.

## SECTION 7010 EXCAVATIONS

**7010.1 Height.** No cut slope shall exceed a vertical height of 100 feet (30.48 m) unless horizontal benches with a minimum width of 20 feet (6.096 m), as shown in Figure D of this chapter are installed at each 100 feet (30.48 m) of vertical height.

**7010.2 Slope.** No excavation shall be made with a cut face steeper than 1 unit vertical in 2 units horizontal (50 percent slope).

**Exception:** The Department or the Board, in case an appeal is made to it under Section 105, may permit the excavation to be made with a cut face steeper in slope than 1 unit vertical in 2 units horizontal (50 percent slope) if the applicant shows through investigation, subsurface exploration, analysis and report by both a soils engineer and an engineering geologist, to the Department's satisfaction, that the underlying bedrock and the materials to be exposed on the slope have strength characteristics sufficient to produce a stable slope with a factor of safety of not less than 1.5 for static loads.

Existing or proposed slopes shall be regraded or cut so as to be not steeper than the bedding planes in formation where the cut slope will lie on the dip side of the strike line or the bedding planes, or other adversely oriented geologic structures shall be supported by retaining walls or buttress fills designed pursuant to the provisions of CBC Section 1807.2 or Section 7015.

**Exception:** Where special conditions warrant, the Department may approve slopes steeper than the bedding planes, or other adversely oriented geologic structures if the applicant shows through investigation, subsurface exploration, analysis and report by both a soils engineer and an engineering geologist, to the Department's satisfaction, that the slopes will have a factor of safety against sliding of not less than 1.5 for static loads.

Whenever grading at the top of any natural or manufactured slope exposes soil or bedrock material that will allow the infiltration of water in a manner that would adversely affect the stability of the slope, the exposed area shall be capped with a relatively impervious compacted soil blanket seal having a minimum thickness of 2 feet (609.8 mm). The soils engineer shall certify in writing that the blanket seal is adequate to reduce water infiltration to permissible levels.

**7010.3 Top of cut slope.** The top of cut slopes shall not be made nearer to a site boundary line than  $\frac{1}{5}$  of the vertical height of cut with a minimum of 2 feet (609.8 mm) and a maximum horizontal distance of 10 feet (3048 mm). The setback may need to be increased for any required interceptor drains. Setback dimensions shall be horizontal distances measured perpendicular to the site boundary. Setback dimensions shall be as shown in Figure E.

## SECTION 7011 FILLS

**7011.1 Height.** No fill slope shall exceed a vertical height of 100 feet (30.48 m) unless horizontal benches with a minimum

width of 20 feet (6.096 m), as shown in Figure D of this chapter are installed at each 100 feet (30.48 m) of vertical height.

**7011.2 Slope.** No fill shall be made which creates an exposed surface steeper than 1 unit vertical in 2 units horizontal (50 percent slope). The fill slopes abutting and above public property shall be so placed that no portion of the fill lies above a plane through a public property line extending upward at a slope of 1 unit vertical in 2 units horizontal (50 percent slope).

**Exception:** The Department or the Board in case an appeal is made to it under Section 105 may permit a fill to be made which creates an exposed surface steeper in slope than 1 unit vertical in 2 units horizontal (50 percent slope), provided:

1. The use of the steeper slope is determined to be necessary due to special design limitations on the site,
2. The gradient does not exceed 1 unit vertical in  $1\frac{1}{2}$  units horizontal (66.7 percent slope) and
3. The applicant shows through investigation, subsurface exploration, analysis and report by both a soils engineer and an engineering geologist, to the Department's satisfaction, that the fill to be used and the underlying bedrock or soil supporting the fill have strength characteristics sufficient to produce a stable slope with a minimum factor of safety not less than 1.5 for static loads. The soils engineer shall verify by necessary testing and observation and shall certify attainment of the required strength characteristics in the fill materials as specified in the approved report.

**7011.3 Compaction.** All manufactured fills shall be placed on natural undisturbed material or approved compacted fill. Fills shall be compacted throughout their full extent to a minimum relative compaction of 90 percent of maximum dry density within 40 feet (12.19 m) below finish grade and 93 percent of maximum dry density deeper than 40 feet (12.19 m) below finish grade, unless a lower relative compaction (not less than 90 percent of maximum dry density) is justified by the soils engineer. The relative compaction shall be determined by ASTM soil compaction test D1557. Every manufactured fill shall be tested for relative compaction by a soil testing agency approved by the Department. A compaction report including a Certificate of Compliance setting forth densities so determined shall be submitted to the Department for review before approval of any fill is given. For slopes to be constructed with an exposed slope surface steeper than 2 units horizontal to 1 unit vertical, compaction at the exposed surface of the slope shall be obtained either by overfilling and cutting back the slope surface until the compacted inner core is exposed, or by compacting the outer horizontal 10 feet (3,048 mm) of the slope at least 92 percent of relative compaction.

Prior to permitting building on deep fills of 40 feet (12.19 m) or more, the Department may require the determination of the settlement characteristics of the fills to establish that any movements have substantially ceased. In those cases, a system of benchmarks shall be installed at critical points on the fill and accurate measurement of both horizontal and vertical movements shall be taken for a period of time sufficient to

define the settlement behavior. In no case shall the period of time be less than one year, with at least four consecutive checks made at intervals of three months.

**Exceptions:**

1. The Department may approve uncompacted fill in self-contained areas where the fills are not to be used to support buildings or structures and no hazard will be created.
2. Fill material placed in areas within cemeteries used or to be used for internment sites shall be compacted to a minimum of 80 percent, unless the fill is placed on a slope steeper than 3 units horizontal to 1 unit vertical, or placed on slopes adjacent to public properties or private properties in separate ownership, or is to be used to support buildings or structures, in which cases it shall be compacted to a minimum of 90 percent.
3. Compaction report is not required for gravel backfill behind retaining walls provided the following conditions are met: height.
  - A. The retaining wall does not exceed 10 feet (3048 mm) in height.
  - B. The maximum distance between the retaining wall and the backcut shall not exceed 36 inches (914 mm).
  - C. The gravel backfill shall be mechanically compacted and covered with concrete pavement or be capped with a 24 inch (609.6 mm) thick soil blanket mechanically compacted to the Department's satisfaction.
  - D. The gravel backfill does not provide vertical or lateral support for any structures or adverse bedding planes.

Where cohesionless soil having less than 15 percent finer than 0.005 millimeters is used for fill, it shall be compacted to a minimum of 95 percent relative compaction based on maximum dry density.

At cut-fill transition zones, there shall be a minimum of 3 feet (914 mm) of compacted fill at the cut pad area. The depth of fill shall be measured from the bottom of the deepest footings and extend horizontally throughout the cut pad area under the building and extend a minimum of 3 feet (914 mm) beyond exterior footings.

**7011.4 Fill slopes.** Fill slopes shall be prepared for planting in one of the following three ways:

1. The slope surface of fills may be prepared for planting by casting topsoil over the slope surface. The topsoil layer shall not exceed 3 inches (76 mm) in depth.
2. The slope surface may be scarified to a depth not to exceed 3 inches (76 mm).
3. Loose material not to exceed 3 inches (76 mm) in depth may be left on the slope.

**7011.5 Toe of fill slope.** The toe of fill slope shall be made not nearer to a site boundary line adjoining other private properties than one half the height of the fill slope with a minimum of 2 feet (609.6 mm) and a maximum of 20 feet (6.096 m).

In the event retaining walls are constructed to retain fill, the height of the fill shall be measured from the elevation of the fill behind the wall and the setback distance may be measured from the face of the wall to the boundary line.

Setback dimensions shall be horizontal distances measured perpendicular to the site boundary. Setback dimensions shall be as shown in Figure E.

**7011.6 Old fills.** All manufactured fills, whether compacted or not, which were placed prior to April 25, 1963, shall be investigated by the soils engineer to determine their suitability for the proposed use before any approval to build is issued.

**7011.7 Combined cut and fill slopes.** Where a combined cut and fill slope exceeds 25 feet (7620 mm) in height, the required drainage bench shall be placed at the top of the cut slope. The effect of surcharge of the fill upon the cut bedrock shall be considered by the soils engineer and engineering geologist, and specific recommendations shall be made relative to the setback between the cut and fill.

**7011.8 Fill areas.** Areas on which fill is to be placed shall be investigated by the soils engineer, or by the soils engineer and geologist to determine if they are adequate to support the fill without undue detrimental consolidation. Slopes exceeding 1 unit vertical in 5 units horizontal (20 percent slope) shall be benched prior to placing fill.

**Exception:** The Department may waive this investigation where it determines by inspection that the underlying material is adequate to support the proposed fill.

## SECTION 7012 PLANTING AND IRRIGATION OF CUT AND FILL SLOPES IN HILLSIDE AREAS

**7012.1 General.** All fill and cut slopes in designated hillside areas shall be planted and irrigated to promote the growth of ground cover plants to protect the slopes against erosion, as required in this Section.

The owner shall be responsible for planting and maintaining all slopes where such is required in this Section.

Planting and irrigation shall comply with the provisions of LAMC Sections 12.40, 12.41 and 12.42.

### **7012.2 Minimum requirements.**

**7012.2.1. Low Slopes to 15 Feet (4572 mm) in Vertical Height.** Slopes with vertical height of less than 15 feet (4572 mm) shall comply with the following:

1. Plant with grass or ground cover plants.
2. An irrigation system shall be installed to irrigate these slopes.
3. The owner shall water the slopes which have been planted with grasses and/or ground cover plants at sufficient time intervals to promote growth.

**Exception:** Where the Department finds the slope is located in such an area as to make hand watering possible, conveniently located hose bibs will be accepted in lieu of the required irrigation system when a hose no longer than 50 feet (15.240 m) would be necessary.



**7012.2.2.** Slopes over 15 Feet (4572 mm) in Vertical Height. Slopes with vertical height over 15 feet (4572 mm) shall comply with the following:

1. Plant with grass or ground cover plants.
2. In addition to grass or ground cover plants, approved shrubs having a one gallon minimum size shall be planted on the slope at 10 feet (3048 mm) on center in both directions or trees at 20 feet (6.096 m) on center in both directions. A combination of shrubs and trees may be utilized. The plants and planting pattern may be varied on the recommendation of the landscape architect.
3. Install an adequate irrigation system during grading prior to planting of the shrubs and trees and before grading is approved.

**7012.3 Special requirements for sprinkler systems.**

**7012.3.1.** Plans for the sprinkler system shall be submitted to and approved by the Department prior to installation.

**7012.3.2.** Irrigation systems shall be designed to provide a uniform water coverage at a rate of precipitation of not more than  $\frac{3}{10}$  inch (7.6 mm) per hour on the planted slope. In no event shall the duration of sprinkling be permitted such as to create a saturated condition and cause an erosion problem, or allow the discharge of excess water into any public or private street.

**7012.3.3.** A check valve and balance cock shall be installed in the system where the drainage from sprinkler heads will create an erosion problem.

**7012.3.4.** Adequate backflow protection shall be installed in each irrigation system as required by the Plumbing Code.

**7012.3.5.** A functional test of the irrigation system shall be performed by the installer for every sprinkler system prior to approval.

**7012.3.6.** Where PVC pipes are used on slopes, they shall be a minimum of schedule 40 and embedded at least 8 inches (203.2 mm) below grade. Such pipes may be exposed for above ground installations provided they are ASTM rated as resistant to ultraviolet sunlight. All risers, sprinkler heads, valves and fittings shall be brass or galvanized metal, or rated as sunlight resistant.

**7012.4 Plants.** All plants required by this Section shall be selected with consideration given to deep-rooted plants needing limited watering, low maintenance and having fire-retardant characteristics.

**SECTION 7013  
EROSION CONTROL AND DRAINAGE DEVICES**

**7013.1 Interceptor terraces.** Paved interceptor terraces shall have a minimum width of 8 feet (2438.4 mm) and shall be installed on the face of all cut and fill slopes at intervals not to exceed 25 feet (7.620 m) measured along a vertical plane. Where only one terrace is required, it shall be at mid-height.

The cross section of interceptor terraces shall meet the specification shown in Figure A.

The longitudinal slope of interceptor terraces shall not be less than 5 percent or more than 12 percent and any change in rate of grade within these allowable slopes shall increase the grade in the direction of flow.

A single run of an interceptor terrace shall not exceed 150 feet (45.72 m) to a down drain.

Down drain shall be embedded round pipes enclosed in concrete shaped as shown in Section C-C of Figure G of this chapter, or an alternate design which is prepared by a civil engineer and acceptable to the Department.

**7013.2 Diverter terraces.** Paved diverter terraces, constructed as shown in Figure B of this chapter, shall be installed at the top of all graded slopes where the tributary drainage area above has a slope exceeding 1 unit vertical in 10 units horizontal (10 percent slope) and a horizontal projection of greater than 40 feet (12.192 m).

**7013.3 Berms.** Berms conforming to the provisions of Figure C of this chapter shall be constructed at the top of all slopes.

**7013.4 Vee channels.** Where a slough wall is required at the toe of the slope by other provisions of this Code, or a retaining wall is built to support any cut or fill slope, a vee channel shall be constructed behind the wall to carry off the slope waters to interceptors, down drains or other approved drainage devices.

**7013.5 Inlet structures, down drains and outlet structures.**

**7013.5.1 Inlet structures.** Inlet structures shall be of concrete, galvanized iron hot dipped in asphalt or equivalent. The inlet structure shall be grated or grided, or of such entry shape as to prevent entry of objects of greater than 4 inches (101.6 mm) in dimension. The inlet structure shall be placed on the bench as shown in Section Y-Y of Figure G of this chapter and shall be so shaped as to provide small entry losses. An overflow structure into the vee down drains shall be provided.

**7013.5.2 Down drains.** Down drains shall have paved inverts and shall be of concrete, minimum 18 gauge corrugated galvanized iron hot dipped in asphalt, or corrugated alloy 3004-H-34 aluminum of minimum 16 gauge and hot dipped in asphalt or equivalent. Pipe down drains shall conform with Section C-C of Figure G of this chapter and shall have a diameter of a size required by runoff calculations, but no less than 12 inches (304.8 mm).

Open channel down drains shall be designed by a civil engineer and shall have a minimum capacity equal to 4 times the required pipe size. The alignment of down drains shall be such as to conserve velocity head.

**7013.5.3 Outlet structures.** Outlet structures shall be of concrete, galvanized iron hot dipped in asphalt or equivalent.

Where outletting into street or other approved termination areas, the structure shall be of a design approved by the Department of Public Works. Where outletting into natural watercourses or other approved locations, the structure shall be provided with adequate velocity reducers, diversion walls, rip-rap, concrete aprons or any similar energy dissipator. All slope drainage shall be collected and disposed of in the drainage device.

**7013.6 Runoff computations.** Runoff shall be based on the proper 50-year isohyetal, and the runoff calculation shall be based on the latest methods adopted by the Bureau of Engineering.

**7013.7 Drainage dispersal wall.** A drainage dispersal wall shall be constructed as set forth in Figure F of this chapter whenever it is necessary to convert channel flow to sheet flow.

**7013.8 Subdrains.** Subdrains shall be laid under all fills placed in natural watercourses. Subdrains shall be placed along the watercourse flow line and along the flow line of any tributary branches. Additional subdrains shall be installed to collect any active or potential springs or seeps which will be covered by the fill. Subdrains shall be installed after the watercourse has been excavated to firm material in preparation for receiving the fill. Individual design shall be shown on each plan for City approval, based on recommendations of the soils engineer and geologist to the satisfaction of the Department.

**7013.9 Gutters.** Eave or ground gutters shall be provided to receive all roof water and deliver it through a non-erosive device via gravity to a street or watercourse, or approved drainage facility, if the slope of the underlying natural ground exceeds 3 percent or if more than 3 feet (914.4 mm) of compacted fill or more than 1 foot (304.8 mm) of uncompacted fill is placed on the ground.

**7013.10 Site drainage.** All pads with cut or fill shall slope a minimum of two percent to an approved drainage device or facility, or to a public street. Where used, the drainage device shall be an adequately designed system of catch basins and drain lines, which conducts the water to a street.

**Exception:** Where the slope of the underlying natural ground does not exceed 3 percent and the compacted fill is less than 3 feet (914.4 mm) in depth, the slope of the pad may be reduced to 1 percent.

**7013.11 Drainage around buildings.** On all building sites, acceptable drainage devices shall be installed to conduct storm water around buildings whenever the distance from the building to the top of any slope is less than 5 feet (1524 mm). Where used, the drainage device shall be an adequately designed system of catch basins and drain lines which conducts the water to a street.

**7013.12 Maintenance of drainage.** Drainage in conformance with the provisions of this Code shall be maintained during and subsequent to construction.

## SECTION 7014 CONSTRUCTION REQUIREMENTS AND LIMITATIONS

**7014.1 Construction, general.** No structure shall be constructed upon a slope steeper than 1 unit vertical in 2 units horizontal (50 percent slope). For building location and setback requirements, see Chapter 18.

### Exceptions:

1. Subject to approval by the Department, construction may be placed upon slopes steeper than one unit vertical in two units horizontal (50 percent slope), provided

reports from a soils engineer and engineering geologist recommend favorably toward construction. The reports shall include adequate information and analysis to show to the Department's satisfaction that the underlying bedrock and natural soils and slope surface materials have strength characteristics sufficient to produce a stable slope with a factor of safety of not less than 1.5 for static loads. The reports shall incorporate provisions for downhill creep in the design of footings where applicable.

2. Where a minor amount of the structure is constructed on the slope or where the construction consists of an unroofed deck, the Department may approve the construction without engineering and geological reports.

**7014.2 Slough wall.** If potential sloughing hazards affecting buildings or structures are present on natural, cut or fill slopes in excess of 20 feet (6.096 m) in vertical height, slough protection devices may be required by the Department.

**7014.3 Flood and mudflow protection.** Flood and mudflow protection shall be provided for all new buildings, additions to buildings and substantial improvements to buildings, which are located on sites determined by the Department to be subject to those conditions, in accordance with Ordinance No. 163,913.

The recommendations for mudflow protection shall be contained in a site investigation report made by persons qualified and licensed in civil engineering, engineering geology and/or soils engineering to ascertain the location, magnitude and extent of potential mudflow hazards and to recommend measures for protection or the elimination of those hazards. The use of the minimum design parameters specified in this Code shall be justified in the report.

Minimum design parameters to be used for mud/debris flow control systems within and at the base of concentrated drainage areas are:

1. A channel flow capacity of 10 cubic feet per second (0.28 m<sup>3</sup>/s) per acre (ha) of tributary drainage area; or
2. A temporary storage capacity of 400 cubic yards (306 m<sup>3</sup>) per acre (ha) of tributary drainage area.

## SECTION 7015 BUTTRESS FILLS

**7015.1 General.** A buttress fill is a designed compacted earth fill used for providing lateral support to an unstabilized rock mass. All buttress fills shall comply with the more restrictive of the requirements of this section or Section 7006.

**7015.2 Foundation.** The ability of the foundation material to support the buttress shall be investigated and the soils engineer shall provide specifications for keying of the base of the buttress and for bonding the buttress to the natural ground.

**7015.3 Base width.** The minimum base width of a buttress fill shall not be less than 12 feet (3658 mm) or less than one half its height, whichever is the greater. The width of a buttress fill may vary uniformly to a top width of not less than 12 feet (3658 mm).

**7015.4 Slope.** The exposed surface of a buttress fill shall not exceed a slope of 1 unit vertical in 2 units horizontal (50 percent slope).

**Exception:** The Department or the Board, in case an appeal is made to it under LAMC Section 105, may permit a buttress fill to be made which creates an exposed surface steeper in slope than 1 unit vertical in 2 units horizontal (50 percent slope), provided:

1. The use of the steeper slope is determined to be necessary due to special design limitations on the site;
2. The gradient does not exceed 1 unit vertical in 1½ units horizontal (66.7 percent slope); and
3. The applicant shows through investigation, subsurface exploration, analysis and report by both a soils engineer and an engineering geologist to the Department's satisfaction, that the buttress fill to be used and the underlying earth material supporting the fill will have strength characteristics sufficient to produce a stable slope with a minimum factor of safety of not less than 1.5 for static loads.

**7015.5 Subdrains.** Subdrains which blanket the entire back face of the buttress or which occur at intervals shall be provided to prevent buildup of hydrostatic pressure. Details of subdrains shall be provided by the soils engineer and approved by the Department.

**7015.6 Blanket seals.** Blanket seals of relatively impervious material shall be required on cut pads above buttress fill where grading exposes the strata to infiltration of water. The blanket shall be of 2 foot (609.6 mm) minimum thickness or of such greater dimension as specified by the soils engineer.

**7015.7 Design.** For design purposes, a maximum value of 75 pound per square foot (3.6 kN/m²) cohesion and an angle of internal friction of 6 degrees may be used to determine the resistance of the bedding plane. Use of greater value shall be substantiated by tests taken along the probable slip plane under conditions simulating the worst possible field conditions. The method of performing these tests shall be included in the soils engineer's report.

The type, percentage of compaction, cohesion and angle of internal friction of the materials to be placed in the buttress shall be specified.

The buttress fill shall be designed for a minimum safety factor of 1.50 based on the residual strength of the bedrock and the lowest shear strength of the fill material.

## SECTION 7016 AREAS SUBJECTED TO SLIDES AND UNSTABLE SOIL

**7016.1 General.** The provisions of this section shall be fully complied with prior to issuance of a grading permit in areas subject to slides or unstable soil.

**7016.2 Records and maps.** The Department may adopt maps delineating areas of relative hazard for the application of this Chapter.

**7016.3 Definitions.** The following definitions shall apply for the purpose of this section:

**ACTIVE LANDSLIDE.** A landslide that has been active since January 1, 1952.

**HISTORICAL LANDSLIDE.** A landslide that was active in historical time prior to 1952 as determined from photographs, maps and written records.

**LANDSLIDE.** The falling, slipping or flowing of a mass of land from a higher to a lower level.

**POSSIBLE PREHISTORIC LANDSLIDE.** Areas where there is no record of a historic landslide, but where topographic expression or geological evidence suggests the possibility of past land movement.

**PREHISTORIC LANDSLIDE.** Conditions where there is no record of historical landslide, but where geological evidence or topographic expression indicates modification of the terrain by land movement.

**7016.4 Permission to construct buildings or to do grading work.**

**7016.4.1 Active landslide or historic landslide area.** No building or grading permits shall be issued for development in active or historic landslide areas until, and unless, stabilization of the entire slide or soil mass that may have an adverse effect on the proposed development or access thereto can be satisfactorily demonstrated to the Department.

**7016.4.2 Prehistoric landslide or questionable area.** No building or grading permit shall be issued for development in prehistoric landslide or questionable areas except by specific approval of the Department, based on approved statements and calculations from soil engineers and engineering geologists attesting to the apparent safety of the proposed developments and demonstrating a minimum factor of safety of 1.5 for the stability of the site and access to the site. For these areas, the affidavit required in Exception 2 of LAMC Subsection 106.4.1 shall be filed unless it has been determined that, as a result of satisfactory reports by soils engineers and engineering geologists, the development is not located in an area subject to slides or unstable soil, which may have an adverse effect on the proposed development or access to the proposed development.

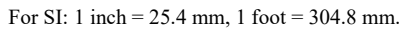
**7016.4.3 Other conditions.** If, in the opinion of the Superintendent of Building, there is evidence of potentially hazardous conditions other than those covered by Sections 7016.4.1 and 7016.4.2, the Department may require satisfactory reports from soils engineers and engineering geologists and, after reviewing those reports, may issue a permit when the reports demonstrate the stability and safety of the development. The affidavit may be required by the Department if it is found that the area in question has elements of hazard or, if the reports so indicate, a permit may be refused.

## GRADING, EXCAVATIONS AND FILLS

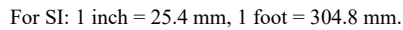
**7016.5 Affidavits required.** When an affidavit required in this section has been filed, upon notice of correction of the unstable conditions due to landslide or unstable soil, the Superintendent of Building shall file with the Office of the County Recorder a certificate specifying that the property is no longer considered hazardous due to landslide or unstable soil.



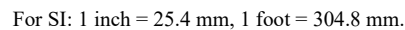
**BASIC GRID MAP  
No. A-13372**



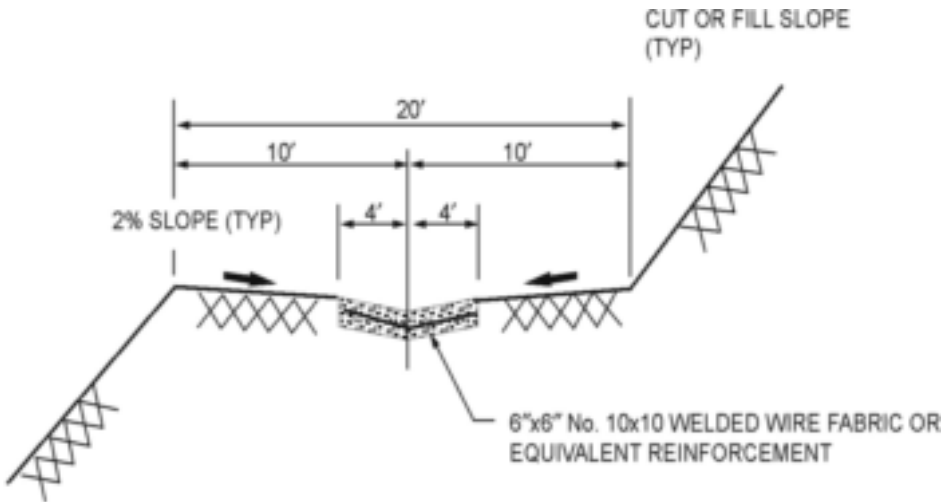
**DIVERTER TERRACE**  
For top of cut slopes/ or fill slopes  
**FIGURE B**



**DIVERTER TERRACE**  
For top of cut slopes/ or fill slopes  
**FIGURE B**



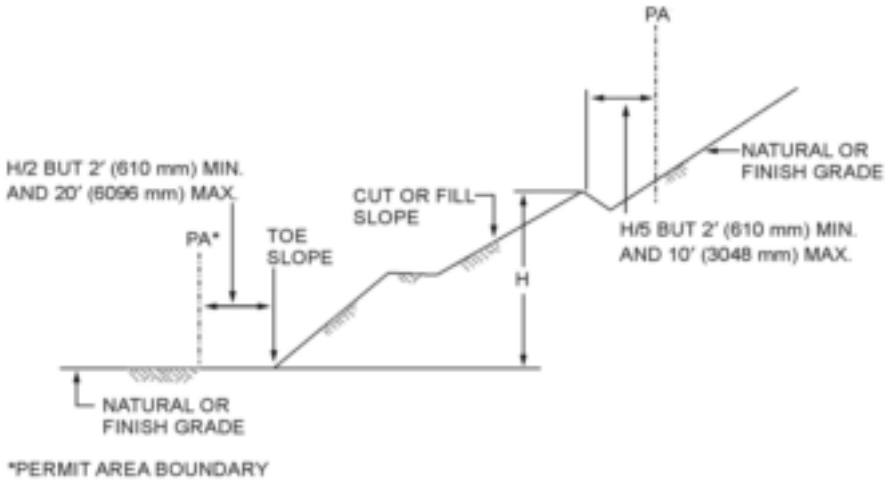
**2022 CALIFORNIA BUILDING CODE  
INCLUDING 2023 CITY OF LOS ANGELES AMENDMENTS**



For SI: 1 foot = 304.8 mm.

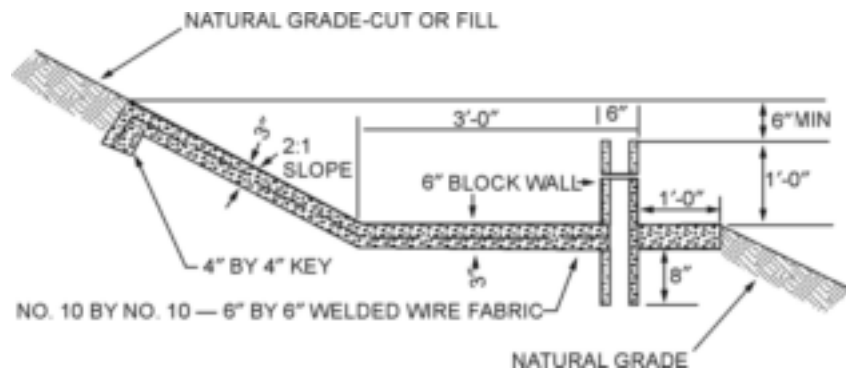
20-FOOT HORIZONTAL BENCH  
FIGURE D

- NOTES:**
- 1. Concrete drainage benches shall be formed before pouring concrete. Forms shall be set to grade and alignment at all breaks in the cross sections. The concrete shall be screeded to cross sections.
  - 2. Guniting drainage benches shall be shot to wire guides. Guides shall be set to grade and alignment at all breaks in the cross section. The Guniting shall be screeded to cross section.
  - 3. When concrete is to be placed against earth, the area to be covered shall be trimmed and finished to the dimensions shown on the plans. The area shall be moistened and thoroughly compacted to form a firm foundation. Grade stakes shall be installed to clearly establish flow lines.



For SI: 1 foot = 304.8 mm.

FIGURE E



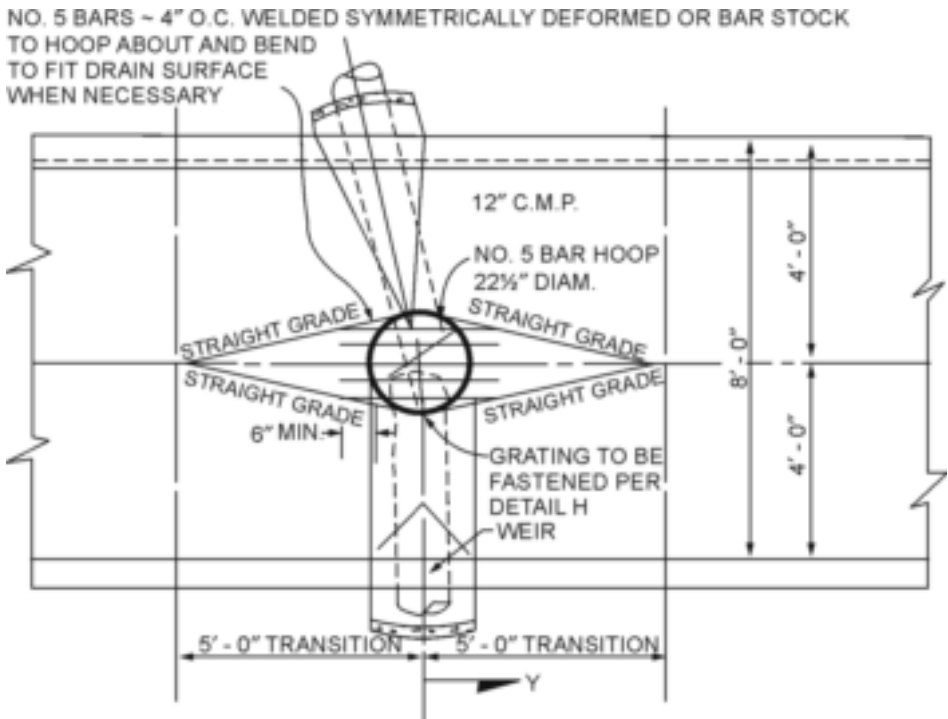
For SI: 1 foot = 304.8 mm.

**DRAINAGE DISPERSAL WALL**  
**FIGURE F**

**NOTES:**

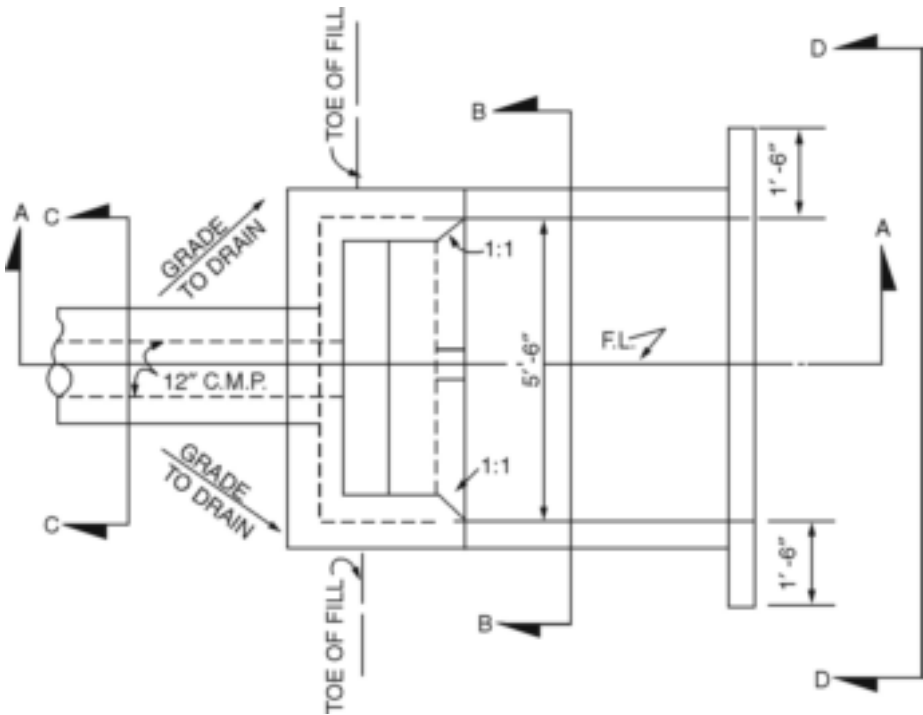
1. Grout all cells and omit all head joints first course.
2. Wall to be located along contour line to establish uniform overflow or seepage.
3. Length of wall to equal length of contour line affected by grading.
4. When concrete is to be placed against earth, the area to be covered shall be trimmed and finished to the dimensions shown on the plans. The area shall be moistened and thoroughly compacted to form a firm foundation. Grade stakes shall be installed to clearly establish flow lines.
5. Prior to construction of a dispersal wall on slopes steeper than 3:1 (H:V), a geology/soils report shall be submitted to the Department. The geology/soils report shall address the stability of the slope and provide foundation design recommendations for the dispersal wall.

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For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

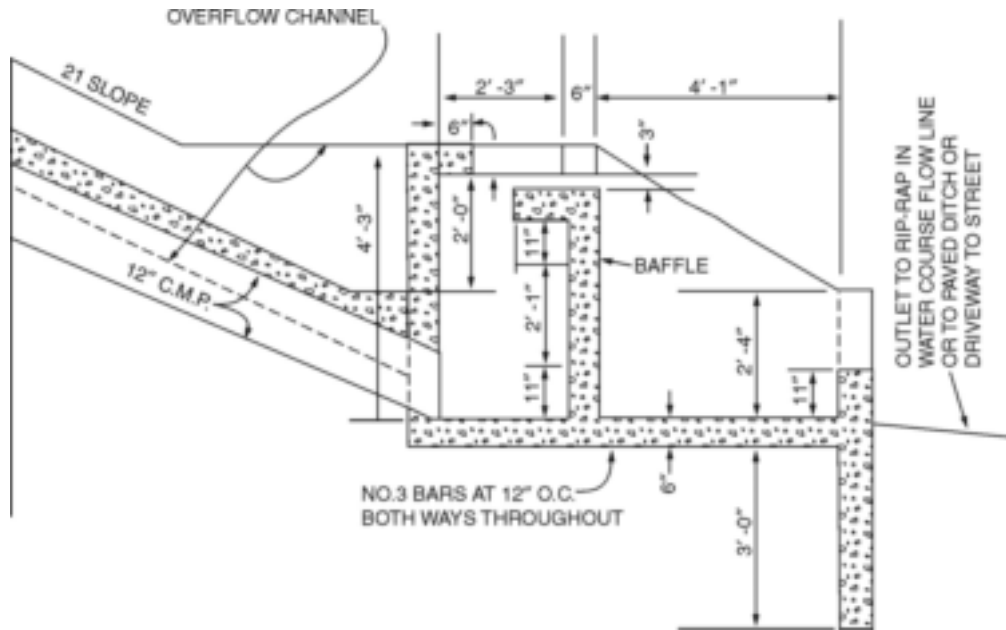
PLAN VIEW INLET STRUCTURE



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

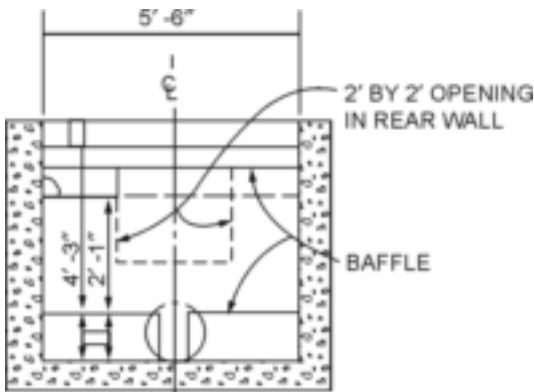
PLAN VIEW OUTLET STRUCTURE  
FIGURE G



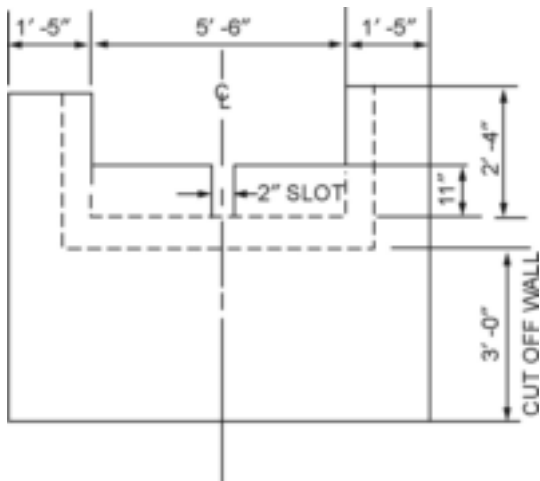


For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

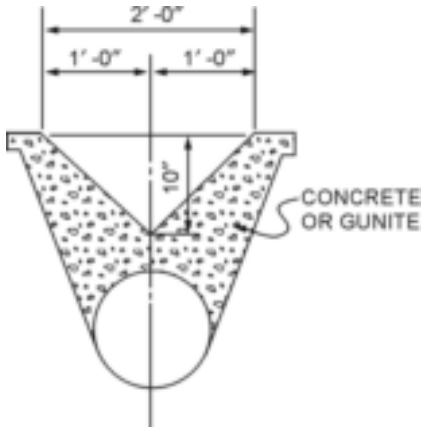
SECTION A-A



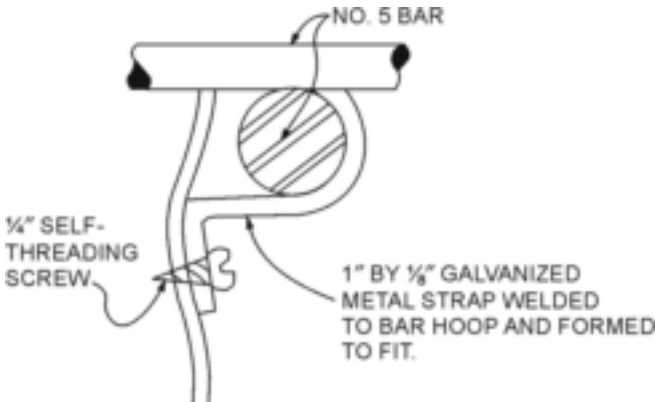
SECTION B-B



SECTION D-D

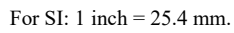


SECTION C-C



GRATING FASTENING DETAIL H

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.



**2022 CALIFORNIA BUILDING CODE  
INCLUDING 2023 CITY OF LOS ANGELES AMENDMENTS**

## CHAPTER 71

# METHANE SEEPAGE REGULATIONS

### SECTION 7101 PURPOSE

This Chapter sets forth the minimum requirements of the City of Los Angeles for control of methane intrusion emanating from geologic formations. The requirements do not regulate flammable vapor that may originate in and propagate from other sources, which include, but are not limited to, ruptured hazardous material transmission lines, underground atmospheric tanks, or similar installations.

### SECTION 7102 DEFINITIONS

For the purpose of this Chapter, certain words and phrases are defined as follows:

**ALARM SYSTEM.** A group of interacting elements consisting of components and circuits arranged to monitor and announce the status of gas concentration levels or supervisory signal-initiating devices and to initiate the appropriate response to those signals.

**BUILDINGS WITH RAISED FLOOR CONSTRUCTION.** A building with the bottom of the floor system raised above grade where the clearance for each of the following items shall be at least: 12 inches (304.8 mm) for the girder, 18 inches (457.2 mm) for the floor joist and 24 inches (609.6 mm) for the structural floors.

**CABLE OR CONDUIT SEAL FITTING.** An approved fitting provided in a cable or conduit system to prevent the passage of gases, vapors, or flames through electrical cable or conduit.

**DESIGN METHANE CONCENTRATION.** The highest concentration of methane gas found during site testing.

**DESIGN METHANE PRESSURE.** The highest pressure of methane gas found during site testing.

**DE-WATERING SYSTEM.** A permanent water removal system, consisting of perforated pipes, gravel, sump pumps and pits, designed to permanently maintain the ground water level 1 foot below the sub-slab vent system.

**GAS DETECTION SYSTEM.** One or more electrical devices that measure the methane gas concentration and communicate the information to the occupants, building management, central station or alarm company with audible or visual signals.

**GRAVEL BLANKET.** A layer of gravel, sand, or approved material designed to transmit gas to the vent riser without obstructing the venting system.

**IMPERVIOUS MEMBRANE.** A continuous gas barrier made of material approved by the Department and installed beneath a building for the purpose of impeding methane migration to the interior of the building.

**MECHANICAL EXTRACTION SYSTEM.** A system operated by a machine which is designed to remove methane gas from below the impervious membrane through the use of fans, blowers, or other powered devices.

**MECHANICAL VENTILATION.** A fan, blower or other similar group of interacting elements operated by a machine within the building, which introduce and/or remove air from an enclosed space.

**NARROW BUILDING.** A building that has a width less than 50 feet (15.24 m), a footprint of less than 50,000 square feet (4,645.15 m<sup>2</sup>) and having a minimum 2 foot (609.6 mm) wide landscaped area immediately adjacent to the exterior wall for at least 50 percent of the perimeter of the building.

**OIL WELL.** A deep hole or shaft sunk into the earth for the exploration of oil or gas; or which is on lands producing or reasonably presumed to contain oil or gas; or which is drilled for the purpose of injecting fluids or gas for stimulating oil recovery, re-pressurizing or pressure maintenance of oil or gas, or disposing of waste fluids from an oil or gas field.

**PERFORATED HORIZONTAL PIPE.** An approved pipe which contains a series of small holes or narrow openings placed equidistant along the length of the approved pipe, which is placed horizontally beneath the foundation of a building, for the purpose of venting accumulated methane gas and preventing the development of elevated gas pressures, or for drainage of ground water to an approved location.

**PPMV.** Parts per Million by Volume.

**SINGLE STATION GAS DETECTOR.** A device consisting of electrical components capable of measuring methane gas concentration and initiating an alarm.

**TRENCH DAM.** An approved subsurface barrier installed within a furrow or ditch adjacent to the foundation of a building, for the purpose of preventing the migration of methane gas beneath that foundation.

**UNOBSTRUCTED OPENING.** A permanent clearing or gap in the walls, floors or roof-ceiling assemblies without windows, doors, skylights or other solid barriers that may restrict the flow of air.

**VENT RISER.** An approved pipe which is placed vertically with joints and fittings connected to Perforated Horizontal Pipes to convey and discharge the gas to the atmosphere.

**SECTION 7103****GENERAL METHANE MITIGATION REQUIREMENTS**

All new buildings and paved areas located in a Methane Zone or Methane Buffer Zone shall comply with these requirements and the Methane Mitigation Standards established by the Superintendent of Building. The Methane Mitigation Standards provide information describing the installation procedures, design parameters and test protocols for the methane gas mitigation system, which are not set forth in the provisions of this chapter.

Boundaries of the Methane Zones and Methane Buffer Zones are shown on the "Methane and Methane Buffer Zones Map" designated as Map number A-20960, dated September 21, 2003, which is attached to Council File No. 01-1305 or the most recent version of the described map.

Equipment and Systems. All devices, components and equipment installed in any methane detection system shall be approved by the Fire Department as set forth in Fire Prevention Bureau (F. P. B.) Requirement No. 71.

**SECTION 7104****GENERAL METHANE REQUIREMENTS**

**7104.1 Site testing.** Site testing of subsurface geological formations shall be conducted in accordance with the Methane Mitigation Standards. The site testing shall be conducted under the supervision of a licensed Architect or registered Engineer or Geologist and shall be performed by a Department approved testing agency.

The licensed Architect, registered Engineer or Geologist shall indicate in a report to the Department, the testing procedure, the testing instruments used to measure the concentration and pressure of the methane gas. The measurements of the concentration and pressure of the methane gas shall be used to determine the Design Methane Concentration and the Design Methane Pressure. The Design Methane Concentration and the Design Methane Pressure shall determine the Site Design Level of Table 71.

**Exception:** Site testing is not required for buildings designed to the requirements of Site Design Level V as described in Table 71, or for buildings designed using the exceptions set forth in Sections 7104.3.2 or 7104.3.3.

**7104.2 Methane mitigation systems.** All buildings located in the Methane Zone and Methane Buffer Zone shall provide a methane mitigation system as required by Table 71 based on the appropriate Site Design Level. The Superintendent of Building may approve an equivalent methane mitigation system designed by an Architect, Engineer or Geologist.

LAMC Table 71 prescribes the minimum methane mitigation systems, such as, the passive, active and miscellaneous systems, depending on the concentration and pressure of the methane present at the site. Each component of the passive, active and miscellaneous systems shall be constructed of an approved material and shall be installed in accordance with the Methane Mitigation Standards.

**7104.2.1 Passive system.** The passive system is a methane mitigation system installed beneath or near the building. The components of the passive system may consist of a de-watering system, the sub-slab vent system, and impervious membrane. The sub-slab vent system shall consist of Perforated Horizontal Pipes, Vent Risers, and Gravel Blankets for the purpose of collecting and conveying methane from the soil underneath the building to the atmosphere.

**7104.2.1.1 De-watering system.** The de-watering system is used to lower the ground water table to a level more than 12 inches below the bottom of the Perforated Horizontal Pipes. The de-watering system shall conduct ground water to an approved location.

**7104.2.2 Active system.** The components of the active system shall consist of one or more of the following, sub-slab system, gas detection system, mechanical ventilation, alarm system and control panel. All components shall be constructed of an approved material, installed in accordance with the Methane Mitigation Standards.

**7104.2.3 Miscellaneous system.** The components of the miscellaneous system may consist of Trench Dam, Cable or Conduit Seal Fitting, or Additional Vent Risers. The component of the miscellaneous system shall be a material approved by the Department and shall be installed in accordance with the Methane Mitigation Standards.

**7104.3 Exceptions to Table 71.** The provisions of this section are exceptions to the construction requirements of Table 71.

**7104.3.1 Repealed.**

**7104.3.2 Buildings with raised floor construction.** If a Building with Raised Floor Construction has underfloor ventilation construction in accordance with the standards below, then the utilities shall be installed with Trench Dams and Cable or Conduit Seal Fittings and a four inch thick gravel blanket shall be installed under and around the elevator pits.

Underfloor ventilation shall be provided by an approved mechanical ventilation system capable of exhausting underfloor air an equivalent of every 20 minutes, or by openings in the underfloor area complying with the following:

- A. The top of the openings shall be located not more than 12 inches (304.8 mm) below the bottom of the floor joists.
- B. The openings shall be distributed approximately equally and located to provide cross ventilation, for example, by locating the opening along the length of at least two opposite sides of the building.
- C. The openings shall be the larger of:
  1. Openings of not less than 1.5 square feet (.0929 m<sup>2</sup>) for each 25 linear feet (7.62 m) or fraction of exterior wall; or
  2. Openings shall be equal to 1 percent of under-floor area.

- D. The openings may be covered with corrosion-resistant wire mesh with mesh openings of greater than  $\frac{1}{4}$  inch (6.35 mm) and less than  $\frac{1}{2}$  inch (12.7 mm) in dimension.

**7104.3.3 Buildings with natural ventilation.** A building with natural ventilation is a building constructed with the following:

- A. The Unobstructed Openings shall exchange outside air.
- B. The size of the Unobstructed Opening shall be the larger of:
  - 1. Opening equal to at least 25 percent of the total perimeter wall area of the lowest level of the building, or
  - 2. Opening equal to at least 25 percent of the floor area of the lowest level of the building.
- C. The Unobstructed Openings shall be evenly distributed and located within the upper portion of at least two opposite exterior walls of the lowest level of the building.

Buildings with natural ventilation that are constructed as described above shall have the utilities constructed with Trench Dams and Cable or Conduit Seal Fittings. If there is an enclosed room or space less than 150 square feet (13.93 m<sup>2</sup>) within the building, then the enclosed room or space shall be constructed with vent openings that comply with the requirements of Section 7104.3.4.

**7104.3.4 Enclosed room or space within building.** Individual enclosed rooms or enclosed spaces with floor area less than 2,000 square feet (185.80 m<sup>2</sup>) may be exempt from providing the Active System as required by LAMC Table 71, provided the vent openings comply with all of the following:

- 1. Vent openings are Unobstructed Openings, except screens made with at least  $\frac{1}{4}$  inch mesh or wind driven turbines on the roof shall be permitted.
- 2. The aggregate size of vent openings shall be the larger of either 5 percent of the total floor area of the room or the area of enclosed space, or 10 percent of the area of walls on the perimeter of the room or enclosed space.
- 3. The vent openings shall be located to prevent the accumulation of methane gases within the room or enclosed space.
- 4. The top of the vent opening shall be located not more than 12 inches (304.8 mm) below roof joists or ceiling joists if located in a wall of a building.
- 5. The vent openings shall be located on either two opposite walls or two adjacent walls of the room or enclosed space if located in a wall of a building.
- 6. The vent openings shall be located no more than 50 feet (15.24 m) from any point within the room or enclosed space.

- 7. When using wind driven turbine, the area of the vent opening shall be calculated by the area of the opening at the attachment of the wind driven turbine at the roof.

- 8. When the vent opening is located in a wall of an adjoining room, then the adjoining room shall be constructed of either an Active System, or have Natural Ventilation as described in Section 7104.3.3.

**7104.3.5 Single family dwelling.** Single family dwellings and buildings accessory to single family dwellings shall comply with all the Methane Mitigation requirements of Table 71, except that the following mitigation system may be substituted:

- A. Single Station Gas Detectors with battery back-up may be installed in lieu of Alarm System and Gas Detection System; or
- B. 6 mil thick Visquene may be used in lieu of Impervious Membrane, when the Site Design Levels are I or II; or
- C. Additional Vent Risers or Mechanical Ventilation may be omitted for buildings with width less than 50 feet (15.24 m) and footprint less than 6,000 square feet (557.41 m<sup>2</sup>) in area; or
- D. Vent Risers may be substituted in lieu of Mechanical Extraction System, provided the Vent Risers are designed at a rate twice that established by the Methane Mitigation Standards.

**7104.3.6 Buildings located in the methane buffer zone.** A building, located entirely or partially in the Methane Buffer Zone, shall be designed to the requirements of the Methane Buffer Zone. Buildings located in the Methane Buffer Zone shall not be required to provide any methane mitigation system, if the Design Methane Pressure is less than or equal to 2 inches (50.8 mm) of water pressure and is either of the following:

- A. Areas which qualify as Site Design Level I or II; or
- B. Areas which qualify as Site Design Level III and the utilities are installed with Trench Dams and Cable or Conduit Seal Fitting.

**7104.3.7 De-watering system.** A De-watering system is not required for either of the following:

- A. If during the site testing, the groundwater level is deeper than 10 feet (3048 mm) below the Perforated Horizontal Pipes, or
- B. If the soil investigation or analysis, as approved by the Department, reveals the groundwater level is more than 12 inches (304.8 mm) below the bottom of the Perforated Horizontal Pipes.

**7104.3.8 Buildings located in the first phase playa vista project.** The First Phase Playa Vista project, as approved by the City on September 21, 1993 and December 8, 1995, shall comply with the methane mitigation program as required by the Department pursuant to the Methane Pre-

vention, Detection and Monitoring Program approved by the Department on January 31, 2001, in lieu of the requirements of this chapter.

**7104.4 Paved areas.** Paved areas that are over 5,000 square feet (464.5 m<sup>2</sup>) in area and within 15 feet (4572 mm) of the exterior wall of a commercial, industrial, institutional or residential building shall be vented in accordance with the Methane Mitigation Standards.

**Exception:** Paved areas located in the Methane Buffer Zone and which qualify for Site Design Levels I, II or III.

#### SECTION 7105 EXISTING BUILDINGS

Additions, alterations, repairs, changes of use or changes of occupancy to existing buildings shall comply with the methane mitigation requirements of Sections 7104.1 and 7104.2, when required by Chapter 81 or 82.

Approved methane mitigation systems in existing buildings shall be maintained in accordance with Section 7106.

#### SECTION 7106 TESTING, MAINTENANCE AND SERVICE OF GAS-DETECTION AND MECHANICAL VENTILATION SYSTEMS

The installation instructions for the gas detection and mechanical ventilation systems, which are required by Table 71, shall be approved and enforced by the Fire Department. All gas detection and mechanical ventilation systems shall be maintained and serviced in proper working condition and meet all requirements of the State of California and City Electrical and Mechanical Codes.

- A. Fire Department. The Fire Department shall enforce the following:
  1. The maintenance and service procedures for each gas detection and mechanical ventilation systems, which are required in Table 71, shall be performed by the building owner in accordance with the manufacturers written instructions.
  2. The annual and maintenance testing shall be performed as set forth by the Fire Department in accordance with the Fire Prevention Bureau (F.P.B.) Requirement No. 71 and Fire Chief's Regulation 4, Section 4J.
  3. The testing of the gas detection and mechanical ventilation systems shall be performed by a person with a valid Certificate of Fitness for Gas Detection Systems as set forth in Section 57.117.
- B. Notification Placard. A permanent notification placard shall be posted and maintained at the front entrance of a building that is constructed with Impervious Membrane, except in residential buildings. The placard shall indicate the presence of the Impervious Membrane.

#### SECTION 7107 EMERGENCY PROCEDURES

With the exception of single-family dwellings, all buildings required by this chapter to have a gas detection system or sub-slab vent system shall, subject to Fire Department approval, have established emergency procedures that include, but are not limited to, the following:

- A. Assignment of a responsible person as safety director to work with the Fire Department in the establishment, implementation and maintenance of an emergency plan.
- B. Conspicuous posting of the Fire Department's telephone number in areas designated by the Fire Department.
- C. Conspicuous posting of emergency plan procedures approved by the Fire Department.

#### SECTION 7108 APPLICATION OF METHANE SEEPAGE REGULATIONS TO LOCATIONS OR AREAS OUTSIDE THE METHANE ZONE AND METHANE BUFFER ZONE BOUNDARIES

Upon a determination by the Department that a hazard may exist from methane intrusion at a geographical location or in an area outside the boundaries established in Section 7103, the Department and the Fire Department may enforce any or all of the requirements of Chapter 71 of this Code as required to preclude potential fire or explosion from methane concentration.

#### SECTION 7109 ADDITIONAL REMEDIAL MEASURES

**7109.1 General remedial measures.** In the event the concentration of methane gas in any building located in a Methane Zone or Methane Buffer Zone reaches or exceeds 25 percent of the minimum concentration of gas that will form an ignitable mixture with air at ambient temperature and pressure, the owner shall hire an engineer to investigate, recommend and implement mitigating measures. These measures shall be subject to approval of this Department and the Fire Department.

**7109.2 Abandoned oil well.** Any abandoned oil well encountered during construction shall be evaluated by the Fire Department and may be required to be re- abandoned in accordance with applicable rules and regulations of the Division of Oil, Gas and Geothermal Resources of the State of California. Buildings shall comply with these provisions and the requirements of Section 6105, whichever is more restrictive.

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## CHAPTER 72

# FIRE DISTRICT REGULATIONS

### SECTION 7200 PURPOSE

These Fire District Regulations were formerly found in Chapter 61.

### SECTION 7201 GENERAL

**7201.1 Fire District No. 1 boundaries.** Fire District No. 1 shall include:

**I. Downtown.** All of the territory bounded by the following streets or freeways:

1. Harbor Freeway from the Santa Monica Freeway to the Santa Ana Freeway;
2. Santa Ana Freeway from the Harbor Freeway to Alameda Street;
3. Alameda Street from the Santa Ana Freeway to Fourth Street;
4. Fourth Street from Alameda Street to Central Avenue;
5. Central Avenue from Fourth Street to the Santa Monica Freeway; and
6. Santa Monica Freeway from Central Avenue to the Harbor Freeway.

**II. Hollywood.** All of the territory bounded by the following streets:

1. Yucca Street from Highland Avenue to Gower Street;
2. Gower Street from Yucca Street to De Longpre Avenue;
3. De Longpre Avenue from Gower Street to Vine Street;
4. Vine Street from De Longpre Avenue to Fountain Avenue;
5. Fountain Avenue from Vine Street to Wilcox Avenue;
6. Wilcox Avenue from Fountain Avenue to Sunset Boulevard;
7. Sunset Boulevard from Wilcox Avenue to Highland Avenue;
8. Highland Avenue from Sunset Boulevard to Hollywood Boulevard;
9. Hollywood Boulevard from Highland Avenue to Orchid Avenue;
10. Orchid Avenue from Hollywood Boulevard to Franklin Avenue;
11. Franklin Avenue from Orchid Avenue to Highland Avenue;

12. Highland Avenue from Franklin Avenue to Yucca Street;
13. All of the territory within 100 feet of Hollywood Boulevard between Hillhurst Avenue and La Brea Avenue; and,
14. All of the territory within 100 feet of Sunset Boulevard between Hillhurst Avenue and the city boundary line 190 feet west of Havenhurst Drive.

**III. Wilshire.** All of the territory bounded by the following streets:

1. Sixth Street from Western Avenue to Commonwealth Avenue;
2. Commonwealth Avenue from Sixth Street to Wilshire Boulevard;
3. Wilshire Boulevard from Commonwealth Avenue to Catalina Street;
4. Catalina Street from Wilshire Boulevard to Eighth Street;
5. Eighth Street from Catalina Street to Mariposa Avenue;
6. Mariposa Avenue from Eighth Street to Seventh Street;
7. Seventh Street from Mariposa Avenue to Ardmore Avenue;
8. Ardmore Avenue from Seventh Street to Wilshire Boulevard;
9. Wilshire Boulevard from Ardmore Avenue to Western Avenue;
10. Western Avenue from Wilshire Boulevard to Sixth Street; and
11. All of the territory within 100 feet of Wilshire Boulevard between the eastern city boundaries of the City of Beverly Hills and the Harbor Freeway, with the exception of the territory within 100 feet of Wilshire Boulevard located between Wilton Place and Highland Avenue.

**IV. Beverly Fairfax.** All of the territory bounded by the following streets:

1. Beverly Boulevard from Fairfax Avenue to a point 120 feet west of Gardner Avenue;
2. A line 120 feet west of and parallel to Gardner Avenue from Beverly Boulevard to Third Street;
3. Third Street from a point 120 feet west of Gardner Avenue to Fairfax Avenue; and
4. Fairfax Avenue from Third Street to Beverly Boulevard.

**V. Crenshaw.** All of the territory bounded by the following streets:

1. Crenshaw Boulevard from Thirty-ninth Street to Stocker Street;
2. Stocker Street from Crenshaw Boulevard to Rosalia Drive;
3. Rosalia Drive from Stocker Street to Marlton Avenue;
4. Marlton Avenue from Rosalia Drive to Thirty-ninth Street; and
5. Thirty-ninth Street from Marlton Avenue to Crenshaw Boulevard.

**VI. Century City.** All of the territory bounded by the following streets:

1. Santa Monica Boulevard between Century Park West and the westerly city boundary of the City of Beverly Hills;
2. The westerly city boundary of the City of Beverly Hills from Santa Monica Boulevard to Olympic Boulevard;
3. Olympic Boulevard from the westerly boundary of the City of Beverly Hills to Century Park West; and
4. Century Park West from Olympic Boulevard to Santa Monica Boulevard.

Excepting that portion of the above-described territory described as follows:

Beginning at the point of intersection of the center line of Olympic Boulevard and Century Park West, thence northwesterly along center line of Century Park West 791 feet, thence N50° 29'00" E822.21 feet, thence S39° 29'13" E9.63 feet, thence S84° 29'13" E29.59 feet, thence N50° 30'47" E19.00 feet, thence S39° 29'13" E295.17 feet, thence S35° 38'00" E to the center line of Olympic Boulevard thence southwesterly along said center line to the point of beginning.

**VII. Westwood.** All of the territory bounded by the following streets:

1. Le Conte Avenue from Levering Avenue to Tiverton Avenue;
2. Tiverton Avenue from Le Conte Avenue to the intersection of Lindbrook Drive and Glendon Avenue;
3. Glendon Avenue from the intersection of Lindbrook Drive and Tiverton Avenue to Wilshire Boulevard;
4. Wilshire Boulevard from Glendon Avenue to Gayley Avenue;
5. Gayley Avenue from Wilshire Boulevard to the alley 200 feet north of Wilshire Boulevard;
6. The alley directly west of Gayley Avenue from a point 200 feet north of Wilshire Boulevard and Weyburn Avenue;
7. Weyburn Avenue from the alley west of Gayley Avenue to Gayley Avenue;

8. Gayley Avenue from Weyburn Avenue to Levering Avenue;

9. Levering Avenue from Gayley Avenue to Le Conte Avenue; and

10. All of the territory within 100 feet of Wilshire Boulevard between Veteran Avenue and the westerly limits of the City of Beverly Hills; and

11. All of the territory within 100 feet of Wilshire Boulevard between Centinela Avenue and Federal Avenue.

**VIII. Van Nuys.** All of the territory bounded by the following streets:

1. Vesper Avenue from Calvert Street to Victory Boulevard;
2. Victory Boulevard from Vesper Avenue to Sylmar Avenue;
3. Sylmar Avenue from Victory Boulevard to Calvert Street;
4. Calvert Street from Sylmar Avenue to Vesper Avenue; and
5. All of the territory within 100 feet of Van Nuys Boulevard between Victory Boulevard and Sherman Way.

**IX. Venice.** All of the territory bounded by the following streets:

1. Horizon Avenue from Ocean Front Walk to Pacific Avenue;
2. Pacific Avenue from Horizon Avenue to Eighteenth Avenue;
3. Eighteenth Avenue from Pacific Avenue to Ocean Front Walk; and
4. Ocean Front Walk from Eighteenth Avenue to Horizon Avenue.

**X. San Pedro.** All of the territory bounded by the following streets:

1. Fourth Street from Pacific Avenue to Harbor Boulevard;
2. Harbor Boulevard from Fourth Street to Seventh Street;
3. Seventh Street from Harbor Boulevard to Beacon Street;
4. Beacon Street from Seventh Street to Eighth Street;
5. Eighth Street from Beacon Street to Pacific Avenue; and
6. Pacific Avenue from Eighth Street to Fourth Street.

Excepting that portion of the above-described territory described as follows:

Beginning at the point of intersection of the easterly line of Mesa Street and the southerly line of Fourth Street; thence southerly along said easterly line of Mesa Street to the northerly line of the alley running parallel to said Fourth Street and distant 155 feet southerly of the center line of said Fourth Street; thence along the

northerly line of said alley to a point 498 feet from the easterly line of said Mesa Street; thence south 10 feet and thence easterly to the westerly line of Centre Street; thence northerly along said westerly line to the southerly line of said Fourth Street; thence westerly along said southerly line to the point of beginning.

**7201.2 Very high fire hazard severity zone.** The Very High Fire Hazard Severity Zone shall be considered a Fire District. The Very High Fire Hazard Severity Zone shall be all of the territory so designated by the boundaries shown on the Very High Fire Hazard Severity Zone Map as established in LAMC Subsection 57.4908 and adopted by the City Council.

**7201.3 Buildings overlapping fire district boundaries.** Every building or structure having any part of the building within a fire district shall be deemed to be entirely in that fire district.

A building or structure located partly within two or more fire districts shall comply throughout with the more restrictive provisions of each fire district.

## SECTION 7202 ADDITIONS TO BUILDINGS

An addition may be made to any building in a fire district if the added portion conforms to this chapter, and also if the entire building, including the addition, is within the height and area limits of CBC Section 503 for building of like type and occupancy.

**Exception:** An addition to a provisional structure shall not be permitted.

## SECTION 7203 GENERAL REQUIREMENTS

**7203.1 General.** In addition to the general requirements of this Code every building located in a fire district shall conform to the requirements of this chapter.

**7203.2 Nonconforming buildings.** Alterations and repairs to a nonconforming building in a fire district shall conform to the provisions of Chapters 81 and 86.

The provisions of this subsection are subject to the roofing requirements of CBC Section 1503.

**7203.3 Construction sheds and canopies.** Construction sheds and protection canopies may be erected in a fire district if there is compliance with the other provisions of this code.

**7203.4 Projections from buildings.** Projections from buildings conforming to the regulations of Chapter 32 of this Code may be constructed in any fire district.

**7203.5 Sprinklers.** In every building in Fire District No. 1, every story or basement with a floor surface elevation more than four feet lower than the highest elevation of the floor landing or tread of any required exit from that story shall be sprinklered.

**Exception:** Sprinklers need not be installed in locations expressly excepted in Article 4, Chapter IX of the LAMC (Plumbing Code), provided other approved fire-protection equipment is installed.

**7203.6 Miscellaneous structures.** In Fire District No. 1, isolated structures constructed of noncombustible materials may be unprotected if used for other than human occupancy.

Loading platforms having no roof and not over 48 inches (1219.2 mm) above the ground may be of wood.

Loading platforms shall be enclosed and shall be firestopped into areas not exceeding 2,500 square feet (232.25 m<sup>2</sup>).

## SECTION 7204 SPECIAL REQUIREMENTS FOR FIRE DISTRICT NUMBER 1

**7204.1 Types of construction permitted.** Every building in Fire District No. 1 shall be one of the following types:

Type I; Type II; Type III; or provisional structures as provided in Section 7205 of this Code.

**7204.2 Type IIB buildings.** Every building of Type IIB construction in Fire District No. 1, except provisional structures allowed by this section, shall have at least 2-hour fire-resistive construction for exterior walls with a fire separation distance of less than 10 feet (3048 mm) and shall have at least 1-hour fire-resistive construction for exterior walls with a fire separation distance of less than 30 feet (9144 mm).

**Exception:** These walls may be one hour less fire-resistive than specified here if the building is not more than one story in height or more than 2500 square feet (232.25 m<sup>2</sup>) in area.

**7204.3 Openings in exterior walls.** In the following cases, all openings in the exterior walls of buildings in Fire District No. 1, other than provisional structures, shall be protected by a fire assembly having a 45-minute fire-resistive rating when the exterior wall has a fire separation distance of less than 10 feet (3048 mm).

**7204.4 Roof covering.** Section D102.2.4 of Appendix D of the CBC is adopted by reference.

**7204.5 Structural fire rating.** Walls, floors, roofs and their supporting structural members shall be a minimum of one-hour fire-resistance-rated constructions.

### Exceptions:

1. Buildings equipped throughout with an automatic sprinkler system in accordance with CBC Section 903.3.1.1.
2. Automobile parking structures.
3. Buildings surrounded on all sides by a permanently open space of not less than 30 feet (9144 mm).
4. Partitions complying with CBC Section 603.1.2 Exception 11.

**7204.6 Exterior walls.** In addition to Section 7204.2 of this Code, Section D102.2.6 of Appendix D of the CBC is adopted by reference.

**7204.7 Architectural trim.** Section D102.2.7 of Appendix D of the CBC is adopted by reference.

**7204.8 Permanent canopies.** Section D102.2.8 of Appendix D of the CBC is adopted by reference.

**7204.9 Roof structures.** Section D102.2.9 of Appendix D of the CBC is adopted by reference.

**7204.10 Plastic signs.** Section D102.2.10 of Appendix D of the CBC is adopted by reference.

**7204.11 Plastic veneer.** Section D102.2.11 of Appendix D of the CBC is adopted by reference.

## SECTION 7205 PROVISIONAL STRUCTURES

**7205.1 Definitions.** For the purposes of this section, “provisional structure” shall mean any structure complying with the provisions of this section.

**7205.2 Size limit.** A Type V provisional structure shall not exceed 12 feet (3657.6 mm) in its longest dimension, 12 feet (3657.6 mm) in height, or 100 square feet (9.29 m<sup>2</sup>) in overall area, including any roof projection.

A Type IIB provisional structure shall not exceed 400 square feet (47.16 m<sup>2</sup>) in building area and shall not exceed 12 feet (3657.6 mm) in height.

**7205.3 Exterior walls.** The requirements of CBC Section 503 shall not apply to provisional structures.

The exterior walls of a Type IIB provisional structure shall not be required to have a fire-resistive time period of construction.

The exterior walls of a Type V provisional structure shall be of one-hour fire-resistive construction.

**Exception:** The exterior walls of a Type V provisional structure, which is located on an automobile parking station lot, are not required to have a time period of fire resistance if the structure does not exceed 12 feet (3657.6 mm) in its longest dimension and 50 square feet (4.645 m<sup>2</sup>) in overall area, including any roof projection and, provided further, that the structure shall be used in conjunction with the business of operating an automobile parking lot and shall maintain a setback from every street front not less than one third of the lot depth.

**7205.4 Location.** A provisional structure shall be located not less than 40 feet (12.19 m) from any building of Type IIB or Type V construction.

**7205.5 Parking lot structures.** In lieu of a permanent foundation, a provisional structure used as an automobile parking lot office may be anchored to an asphalt slab by 4 or more 1/2 inch by 12 inch (12.7 mm x 304.8 mm) metal pins or equivalent anchorage. Toilet facilities will not be required.

## SECTION 7206 SPECIAL REQUIREMENTS FOR FIRE DISTRICT NUMBER 2 (Deleted)

## SECTION 7207 SPECIAL REQUIREMENTS FOR THE VERY HIGH FIRE HAZARD SEVERITY ZONE

**7207.1 Unenclosed under-floor areas.** Residential buildings shall have all under-floor areas completely enclosed to the ground with construction as required for exterior walls.

### Exceptions:

1. Complete enclosure shall not be required where the underside of all exposed floors and all exposed structural columns, beams and supporting walls are protected as required for exterior one-hour fire-resistive construction.
2. The area under cantilevered balconies and unroofed walking decks need not be considered as under-floor area, provided exposed utilities, pipes or other mechanical devices are not located in the area.

**7207.2 Utilities.** All utilities, pipes, furnaces, water heaters or other mechanical devices located in an exposed under-floor area of a residential building shall be enclosed with material as required for one-hour fire-resistive construction. Adequate covered access openings for servicing such utilities shall be provided as required by appropriate codes.

**7207.3 Attic openings.** All exterior attic openings shall be protected with a maximum 1/4 inch (6.35 mm) noncombustible and corrosion-resistant screen.

**7207.4 Roofing.** All buildings shall have a fire retardant roofing assembly complying with the requirements of Class A roof covering as defined in CBC Section 1505. Wood shakes and shingle are not permitted in the VHFHSZ.

## SECTION 7208 PROHIBITED VEHICLES

No vehicle in Fire District No. 1 shall be used except as permitted for a mobilehome, travel trailer or camp car in a park designed for that use or for an industrial catering truck as defined in LAMC Section 202. However, no person shall park an industrial catering truck continuously at any location on private property for the purpose of dispensing food or drink for a period of time exceeding one hour, and regardless of the length of time parked at any location, no person after departure from that location shall again park an industrial catering truck at that location, or at any location on private property within 500 feet (152.4 mm) of that location or private property, for the purpose of dispensing food or drink within a period of four hours after departure.

## CHAPTER 81

# MAINTENANCE OF EXISTING BUILDINGS AND STRUCTURES

### SECTION 8101 GENERAL PROVISIONS

**8101.1 Purpose.** The purpose of this chapter is to establish minimum standards to regulate and encourage the proper maintenance and use of existing buildings, structures and premises in order to safeguard life, limb, health, property and public welfare.

**8101.2 Scope.** The provisions of this chapter shall apply to all or portions of existing buildings, structures or premises.

#### Exceptions:

1. Historical buildings may comply with Section 8119 of this Code.
2. Existing commercial or industrial buildings, for which a building permit was issued prior to April 1, 1994, may be converted to "joint living and work quarters" provided the existing building complies with Chapter 85 of this Code.

### SECTION 8102 ENFORCEMENT

**8102.1 General.** It shall be unlawful for any person, firm or corporation to erect, construct, enlarge, alter, repair, maintain, move, improve, remove, convert, demolish, equip, use or occupy any existing building, structure, premises or portion thereof in violation of the provisions of this Chapter.

Any person who violates or causes or permits another person to violate any provision or requirement of this chapter is guilty of a misdemeanor. Any person includes an owner, lessor, sublessor, manager or person in control of a building subject to this chapter. The legal owner of a building is that person, firm, corporation, partnership or other entity whose name or title appears on record with the Los Angeles County Recorder's Office.

**8102.2 Occupant responsibility.** It shall be unlawful for any tenant or other individual occupying any dwelling unit, efficiency dwelling unit, guest room or suite in a building to fail to keep the dwelling unit, efficiency dwelling unit, guest room or suite free from an accumulation of debris, filth, rubbish and garbage.

**8102.3 Penalties.** Any person convicted of a misdemeanor due to violation of any provision or requirement of this chapter is subject to penalties as prescribed by LAMC Section 11.00(m), which is quoted in part as follows:

"Every violation of this Code is punishable as a misdemeanor unless provision is otherwise herein made, shall be punishable by a fine of not more than \$1,000.00 or by imprisonment in the County Jail for a period of not more than six months, or by both such fine and imprisonment.

Every violation of this Code which is provided for therein to be an infraction is punishable by a fine as set forth in this

Code section, or as otherwise provided in this Code, not to exceed \$50.00 for the first violation, \$100.00 for a second violation of the same provision within one year, and \$250.00 for each additional violation of the same provision within one year.

Each person shall be guilty of a separate offense for each and every day during any portion of which any violations of any provision of this Code is committed, continued or permitted by such person and shall be punishable accordingly."

Nothing in this Chapter or Code shall prohibit the payment of investigative costs by any person so convicted of any provision of this chapter, to the Department to reconstitute said agency for all costs expended to investigate and/or enforce the provisions of this Code.

### SECTION 8103 EXISTING BUILDING RIGHTS

**8103.1 General.** Every existing building or structure constructed under a valid permit and occupied in conformance with code regulations and Department approvals in effect at the time of such construction and occupancy shall be allowed to continue to exist under those regulations and approvals even though subsequently adopted regulations and approvals have changed the requirements, provided the building, structure or portion thereof does not become a nuisance, a hazardous building, or a substandard residential building, and provided further, that subsequently adopted regulation specifically applicable to existing buildings or structures are met.

**8103.2 Repair, rehabilitation, alteration and addition.** Repair, rehabilitation, alteration, and addition shall comply with Article 1.2, Chapter IX of the LAMC.

**8103.3 Group I occupancy.** Buildings classed in Group I Occupancy because of the use or character of the occupancy that are not more than 3 stories in height, that were established prior to March 4, 1972, and that have been continuously operated as that use or character since that time shall comply with Article 1.2, Chapter IX of the LAMC.

### SECTION 8104 BASIC MAINTENANCE AND REPAIR OF EXISTING BUILDINGS AND PREMISES

Every existing building, structure, premises or portion thereof shall be maintained in conformity with the code regulations and Department approvals in effect at the time of such construction and occupancy unless specifically exempt by written approval of the Department.

Every existing building, structure, or portion thereof shall be maintained in a safe and sanitary condition and good repair. The premises of every building or structure shall be maintained in good repair and free from graffiti, debris, rub-

bish, garbage, trash, overgrown vegetation or other similar material.

**8104.1.** All physical elements of every existing building, structure or portion thereof shall be maintained by cleaning, painting, staining, refinishing or other restorative means, in a condition as close as reasonably feasible to their originally required and approved state.

**8104.2.** The interior of every existing building, structure and portion thereof and the exterior wall surfaces and premises thereof shall be maintained clean and free from accumulation of debris, rubbish, garbage, trash, overgrown vegetation and other similar material.

**8104.3.** The roof of every building or structure shall be kept waterproof and all devices which were provided to convey the roof water from the roof shall be maintained so as to be capable of fulfilling that purpose.

**8104.4.** The walls and ceilings of every room in every building, structure or portion thereof shall be finished, sealed, coated, painted, or covered in an approved manner so as to maintain them in a clean and sanitary condition. Loose wallpaper or other surfacing shall be removed or repaired so as to provide a smooth, tight-fitting, clean and sanitary surface.

**8104.5.1.** The doors, windows, cabinets, frames and similar finishes shall be finished, sealed, coated, painted or covered in an approved manner so as to maintain them in a clean and sanitary condition. Broken or cracked glass or plastics shall be replaced. Torn, worn or broken screens shall be repaired, replaced or removed, unless removal is otherwise prohibited by Code.

**8104.5.2.** Legally required insect screens shall not be removed for other than repair or replacement.

**8104.6.** The floor and floor covering of every room in every building, structure or portion thereof shall be maintained in a clean and sanitary condition. The floor and covering shall be maintained free from defects, holes, loose, worn or missing portions which could present a safety hazard to occupants.

**8104.7.** The plumbing fixtures, shower enclosures, wastewater drain lines, water supply lines, counters, drainboards and adjoining wall and floor areas provided to protect against water damage in every building or structure shall be maintained in good repair and in a clean and sanitary condition.

Leaking drain or supply lines shall be repaired or replaced. Cracked, chipped or damaged fixtures shall be repaired or replaced. All surfaces provided to protect against water damage shall be without cracks, defects or missing portions. All fixtures, enclosures, counters and surfaces shall be kept in a clean and sanitary condition free from dirty or foreign materials.

**8104.8.1.** The electrical service, lines, switches, outlets, fixtures and fixture coverings and supports in every building or structure shall be maintained in good repair. Broken, loose, frayed, inoperative, defective or missing portions shall be repaired or replaced. The fixtures, fixture coverings, switches, and outlets shall be maintained in a clean and sanitary condition free from dirty or foreign materials.

**8104.8.2.** Unless specifically permitted in the National Electrical Code, flexible cords and cables shall not be used as a substitute for the fixed wiring of a structure.

**8104.8.3.** Panelboards and fuseholders shall not be equipped with fuses which exceed the rated ampacity of the protected circuit.

**8104.9.** All plumbing and waste drain lines in every building or structure shall be maintained clear of blockages which would cause overflow at any fixture or which would cause any fixture to overflow under the condition of normal water supply to that fixture.

**8104.10.1.** All water supply lines to kitchen and bathroom fixtures shall be maintained so as to provide at least one gallon per minute rate of water flow, of at least 100°F. However, the maximum temperature at the water heater or storage tank need not exceed 140°F (60°C).

**8104.10.2.** Hot water shall continue to be provided to each residential kitchen and bathroom fixture at all times.

**8104.10.3.** No time clock or other devices shall be installed to prevent the supply of the required hot water to residential rental units at any time.

**8104.11.** The existing central heating or individual unit heating for each dwelling unit or guest room shall be maintained in good repair and operable.

**8104.12.** The exterior wall surfaces of every existing building or structure shall be maintained weathertight, in good repair and in a clean and sanitary condition.

**8104.13.** All fences shall be maintained in good repair and shall be kept straight, uniform and structurally sound. Wooden fences shall be either painted or stained or otherwise treated or sealed in an approved manner to prevent their becoming a nuisance from weathering or deterioration.

**8104.14.** All masonry units shall be maintained with head, bed and wall joints solidly filled with mortar.

**8104.15.** The exterior of all privately owned buildings and fences shall be free from graffiti when such graffiti is visible from a public street or alley.

**8104.16.** Properties must be free of dead vegetation, shrubs, and trees. In addition, any existing or new irrigation equipment must be maintained and in working order (local and state requirements may apply to watering frequency and consumption).

## SECTION 8105

### ILLEGAL BUILDINGS, CONSTRUCTION AND USE

Every existing building, structure or portion thereof constructed without a building permit shall be made to conform to the provisions of this Code or shall be demolished and removed. Any use or occupancy existing in a building without authorization of a building permit shall be discontinued and removed or shall be made to conform to the provisions of this Code.

**SECTION 8106  
FIRE DISTRICT REQUIREMENTS**

**8106.1 Fire sprinklers.** In an existing building in Fire District No. 1, every story or basement which has a floor surface elevation more than 4 feet (1219.2 mm) lower than the highest elevation of the floor landing or tread of any required exit from that story shall be sprinklered.

**Exception:** Building that is occupied only as a single-family dwelling.

**SECTION 8107  
RESERVED**

**SECTION 8108  
NUISANCES, HAZARDOUS BUILDINGS AND  
SUBSTANDARD RESIDENTIAL BUILDINGS**

Existing buildings which have been determined to be nuisances, hazardous buildings or substandard residential buildings under Chapter 89, Article 1, Chapter IX of the LAMC are subject to compliance with all the requirements of this Code for a new building.

The Department may require an existing building which has been determined to be a nuisance, a hazardous building, or a substandard residential building to comply with all current requirements of this Code for a new building, or may allow the repair of the building without requiring compliance with all the requirements of this Code for a new building where it is determined that the continuance of the existing condition does not pose a substantial hazard to life, limb, health, property or public welfare.

**8108.1 Additional requirements for buildings determined to be nuisances, hazardous or substandard residential buildings.** The Department may impose additional requirements for buildings determined to be nuisances, hazardous or substandard residential buildings in order to address specific conditions that affect proper maintenance, use, repair, rehabilitation, alteration and to safeguard life, limb, health, property and public welfare. If the Department determines to impose additional requirements, the owner shall be notified that a hearing has been scheduled before the Board to determine if additional requirements should be imposed.

**8108.2 Notice of intent and public hearing.** The notice of intent to impose additional requirements and the notice to hold a public hearing before the Board shall be given either by personal delivery thereof to the person to be notified or by deposit in the United States mail in a sealed envelope, postage prepaid, addressed to the person to be notified at the address shown on the last equalized assessment roll. Service by mail shall be deemed to have been completed at the time of deposit in the U. S. Mail. The failure of any owner or person to receive the notice shall not affect in any manner the validity of any of the proceedings taken thereunder. Proof of

giving any notice may be made by an affidavit of any employee of the City which shows service in conformity with this section.

The notice shall indicate:

1. The street address of the building or premise, or the approximate street address if no street address has been assigned.
2. That the condition of the building constitutes a nuisance, hazardous or substandard residential building.
3. The additional requirements to be imposed by the Department.
4. Identify the need for the additional requirement.
5. That the owner must appear at a hearing conducted by the Board, at a time, date and location specified in the notice, which shall be at least 15 days from the date of the notice.
6. That upon any such appearance, the owner will be given the opportunity to present and to elicit testimony and other evidence to show cause why the additional requirements should not be imposed.
7. That this appearance may be made by the submission of written materials if they have been received by the City at least three days prior to the scheduled hearing at the mailing address specified in the notice.

**8108.3 Public hearing.** The matter shall be scheduled for hearing before the Board on the date and time specified in the notice. The Board shall proceed to determine whether the additional requirements specified in the notice of intent should be imposed.

The person notified to appear, or the actual owner of the parcel or premises in the event the person notified is not the owner, or any person representing the owner who attends the hearing, shall be given an opportunity to present and to elicit testimony and any other evidence on whether the additional requirements should be imposed. The Board shall proceed with the hearing whether or not that person is in attendance. Written material shall be considered by the Board if it is received at least three days prior to the scheduled hearing date.

At the conclusion of the hearing, the Board shall make a finding and determine whether the condition of the premises warrants additional requirements in order to safeguard life, limb, health, property and public welfare. The owner and any other person who appeared at the scheduled public hearing on behalf of the owner, either in person or by the submission of written material, shall be notified in writing of the determination of the Board. Once the Board has acted, it shall have no further jurisdiction over any matter relating to the imposition of additional requirements on the premises. Any further determinations in this regard, including requests for extensions of time, shall be within the sole jurisdiction and discretion of the Superintendent of Building and not appealable to the Board.

### SECTION 8109 RELOCATED BUILDINGS

Any building or structure moved into, out of or within the City shall comply with the requirements of Chapter 83 of this Code.

### SECTION 8110 UNREINFORCED MASONRY BEARING WALL BUILDINGS

Existing unreinforced masonry bearing wall buildings constructed or under construction prior to October 6, 1933, shall conform to the requirements of Chapter 88 of this Code. For other than full compliance to Chapter 88, all alterations, repairs, additions, Change of Occupancy, change in Class Rating per Table 88A, change in Occupancy Category, and increase in occupant load shall comply with the requirements of Article 1.2, Chapter IX of LAMC.

### SECTION 8111 RESIDENTIAL HEATING

**8111.1.** Every residential unit which is rented or leased shall be provided with approved heating facilities capable of maintaining a room temperature of 70°F (21°C). at a point three feet above the floor in all habitable rooms.

Where individual heating facilities are provided within a residential unit, a rating of the facilities in B.T.U. equal to six B.T.U. per cubic foot of habitable floor area shall be considered as fulfilling the required temperature level. All gas heating facilities shall be properly vented.

**8111.2.** Where the heating facilities cannot be activated by the occupant of a residential unit, the owner shall activate the heating facilities whenever the residential unit temperature is 70°F (21°C). or less. No time clocks or other devices shall be installed to prevent the occupants of the residential unit from activating the heating facility.

**8111.3.** A legally installed comfort heating appliance shall not be removed or made inoperable.

### SECTION 8112 RESIDENTIAL PLUMBING

When existing water heaters serving rental or lease residential units are replaced, they shall be replaced with units which will provide an overall equivalency or greater in water heater gallon capacity and rate of heat recovery to the replaced units.

Any water heater which is relocated, reinstalled or newly installed from the interior of the building to a location outside the building shall be installed in an approved enclosure. Any new water heater which is installed outside the building shall be installed in an approved enclosure.

### SECTION 8113 ROD BRACING SYSTEMS

Buildings constructed with adjustable steel rod bracing systems designed to transfer horizontal forces shall be subject to inspection after completion of the building or structure for the purpose of maintaining proper adjustments of the bracing assembly. The owner shall be duly notified if adjustments are found necessary and, upon the receipt thereof, shall cause adjustments to be made satisfactory to the Department.

### SECTION 8114 PARAPETS AND APPENDAGES

No building shall have any parapet or appendage attached to or supported by an exterior wall of the building and located adjacent to a public way or to a way set apart for exit from a building or passage of pedestrians, if such parapet or appendage is not so adequately constructed, anchored or braced as to remain wholly in its original position in event of an earthquake having the effect designated by Chapter 16 of this Code.

Whenever the Department determines by inspection that an existing parapet or appendage is not so adequately constructed, anchored or braced as to remain wholly in its original position, the Department shall, by written notice addressed to the owner, person or agent in control of the building, designate and describe the hazards and inadequacies of construction, anchorage or bracing determined by such inspection and direct that the necessary corrections be made to ensure that all of the parapet or appendage remain in its original position. Upon receipt of such notice, the owner, person or agent in control of the building where such parapet or appendage exists, shall, within one year from the date of such notice:

1. Submit to the Department suitable corrective plans;
2. Obtain the necessary alteration permit; and
3. Complete all the work necessary or ordered. All the plans thus submitted shall have the intent of eliminating the parapet or appendage, or reconstructing such parapet or appendage so that it will conform structurally with requirements of this Code, or strengthening such parapet or appendage by bracing or other means so that it will resist the forces of an earthquake and remain in its original position.

Any person receiving a notice as set out in this subsection may appeal from the notice of the Department in the manner provided by LAMC Section 98.0403.

### SECTION 8115 SANDBLASTING

No building or other structure shall be sandblasted except by a wet process precluding the creation of dust and dry debris.



Inspection shall be made by the Department after scaffolding and protective enclosure are in place and before work is started.

**Exception:** Dry sandblasting may be permitted by the Department only when evidence is submitted that this process is necessary for the proper cleaning of the building or structure. No permission may be granted unless it can be shown that the use of this process will not be detrimental to adjoining property or public welfare.

## SECTION 8116 SPECIAL PROVISIONS FOR LIGHT-HOUSEKEEPING ROOMS

**8116.1 General.** This chapter does not prevent the use of a room as a light-housekeeping room in any building provided that such room fully complies with the provisions of this section.

A light-housekeeping room is any room which is designed and used both as a sleeping room and for the cooking or preparation of food.

**8116.2.1.** Light-housekeeping rooms shall contain not less than 150 square feet (13.93 m<sup>2</sup>) in area and shall be occupied by not more than two people. The cooking appliance therein, if any, shall be used solely for the cooking or preparation of meals for consumption by the occupants of the room. The use of cooking appliances, existing in rooms prior to September 20, 1963, shall be in accordance with the provisions of Sections 8116.2.2 through 8116.2.10.

**Exception:** A room having a superficial floor area of not less than 120 square feet (11.14 m<sup>2</sup>) may be used for light-housekeeping if it is occupied by only one person.

**8116.2.2.** The cooking appliances used therein, if any, shall have no more than two burners. If electric appliances are used, they shall have been tested and approved by the Underwriters Laboratories. If gas appliances are used, they shall have been tested and approved by the American Gas Association.

**8116.2.3.** The installation, maintenance or use of said cooking appliance shall not be hazardous to life, health or property.

**8116.2.4.1.** Said cooking appliance shall rest upon its own legs, or shall be an approved, built-in unit of fixed installation. Said appliance shall be set not closer than six inches from any wall or projection thereof, and shall rest upon an impervious surface.

**8116.2.4.2.** The walls behind and adjacent to said cooking appliance shall be lined or back-flashed with non-combustible material equivalent to 1/4 inch (6.35 mm) asbestos mill board. The back-flashing shall extend from 12 inches (304.8 mm) below to 24 inches (609.6 mm) above the base of the appliance. There shall be clear and unobstructed space of 36 inches (914.4 mm) above the surface of the cooking appliance.

**Exception:** Approved prefabricated kitchen units.

**8116.2.5.1.** Gas-burning appliances shall be connected to the gas supply piping by approved metal piping with an approved gas shutoff valve readily accessible within the room, and maintained in accordance with the provisions of the Plumbing Code.

Electrical appliances and serving circuits shall be installed and maintained in accordance with the provisions of the Electrical Code.

**8116.2.5.2.** Guest rooms, other than those legally converted for light-housekeeping purposes, shall not contain a fuel-gas-burning or electrically energized cooking appliance.

**8116.2.6.** The room shall contain an approved sink with hot and cold running water.

**8116.2.7.** An approved storage cabinet shall be installed in the room. All food, dishes and cooking and eating utensils shall be stored therein when not in use.

**8116.2.8.** The bed in such a room, or any drapes, curtains or other readily combustible material shall be so located that they do not come in contact with the cooking appliances, if any.

**8116.2.9.** Any toilet room opening directly into such a room shall have a tight-fitting door.

**8116.2.10.** An approved method of heating shall be installed in each such room. Cooking appliances shall not be used for the purpose of heating such rooms. No cooking appliance shall be installed within a closet in such a room.

**8116.3 Bath and water closet facilities.** In any building containing six or more light-housekeeping rooms, there shall be one water closet and one bath facility for each five units or fraction thereof. In any building containing five or less light-housekeeping rooms, there shall be one water closet and one bath facility which may be in the same room for each three light-housekeeping units in the building. Such toilet and bath facilities shall be accessible to and from a public hallway.

## SECTION 8117 FIRE WATCH

Whenever the Department of Building and Safety determines by inspection that a violation affecting life safety from threat of fire exists in an occupied building, the Department may require that a fire watch be assigned to the building. The fire watch shall be a licensed uniformed person chosen by the owner and approved by the Department and shall perform duties in accordance with the Department's fire watch procedures. The fire watch shall remain in effect until all fire safety work is completed and approved by the Department. Any person who fails to comply with a Department fire watch order shall be guilty of a misdemeanor.

## SECTION 8118 POOL WATER CLARITY

The recirculation and purification system of any swimming pool, fish pond, or any other body of water which is required to be fenced by Section 6109, shall be operated and main-

tained so as to keep the water in such pool or other body of water clean and of reasonable clarity.

In order to define reasonable clarity of the water in such pool, pond or body of water, the following standard shall be applied:

A painted black disk, 6 inches in diameter on a 12 inch by 12 inch (304.8 mm x 304.8 mm) white tile, placed at the bottom of the pool at its deepest point, shall be clearly visible from the sidewalks around the pool from all distances up to 10 yards (9.14 m) from such disk, or the water is determined to not be of reasonable clarity.

## SECTION 8119 HISTORICAL BUILDINGS AND STRUCTURES

Notwithstanding any other provisions of this Code to the contrary, the following provisions shall apply in addition to the provisions of Title 24, Part 8 of the California Code of Regulations, the *State Historical Building Code*.

**8119.1 Additions, alterations and repairs.** Additions, alterations and repairs shall be made in accordance with the non-conforming rights of Sections 8101.2 and 8103.

**8119.2 Change of use or occupancy.** Change of use or occupancy shall comply with Sections 8203 and 8204.

**8119.3 Earthquake hazard buildings.** Where the requirements of Chapter 88 of this Code are more restrictive than the requirements of this Chapter, the requirements of Chapter 88 shall apply.

### 8119.4 Preservation of historical buildings.

**8119.4.1.** If the Department determines that any building, structure, premises or portion thereof, (1) has been designated an historical monument or (2) is being considered as a historical monument by the Cultural Heritage Commission, and (3) is subject to vandalism, or unlawful entry, or has become a hazardous building, nuisance or substandard building, then the Department may cause the building, structure, or premises or any portion thereof, to be immediately barricaded and protected by such means as the Department may deem advisable, including the use of a Department awarded contract.

**8119.4.2.** The Department may cause the building, structure or premises, or any portion of the building, structure or premises, to be immediately barricaded or protected from further deterioration. The barricading or protection may be accomplished by any City department with the forces to perform the work, upon receipt of a request from the Department, or by any forces under contract to the City. Where the work is accomplished by other than City forces, the cost shall be paid from the "Repair and Demolition Fund" as established in Section 8906. All costs incurred pursuant to this section shall be a personal obligation against the owner of the property upon which the particular building or structure or any portion is located, recoverable by the City in an action before any court of competent jurisdiction. These costs shall include an amount equal to 40 percent of the cost to perform the actual work, but not less than

the sum of \$100.00, to cover the City's costs for administering any contract and supervising the work required. In addition to this personal obligation and all other remedies provided by law, the City may collect any judgment, fee, cost, or charge, including any permit fees, fines, late charges, or interest, incurred in relation to the provisions of this section as provided in *Los Angeles Administrative Code* Sections 7.35.1 through 7.35.8.

**8119.4.3.** The administrative fee of 40 percent of the costs shall not be included in the calculation of costs incurred for or arising out of any barricading, or protecting, resulting from an event or course of events that prompted a declaration of a state of emergency, local emergency, war emergency or major disaster by the Mayor, the Governor of the State, or by the President of the United States.

**8119.4.4.** If the Department determines that the building, structure, or premises or portion thereof is not in danger of imminent deterioration or vandalism, then the Department may, in lieu of the above, require the building, structure or premises or any portion thereof to be secured, repaired or protected pursuant to the provisions of Chapter 89 of this Code.

**8119.5. Vandalism of Historical Buildings.** The Department shall have the authority to issue an Order to Comply to an owner of any building that has been designated an historical monument or is being considered as an historical monument by the Cultural Heritage Commission if the Department determines that the building has become subject to vandalism or constitutes a public nuisance. In such circumstances, the Department shall have the authority to issue any order it deems appropriate to keep the property from being further vandalized or from becoming a public nuisance including, but not limited to, ordering that the building be secured and fenced.

For the purposes of this provision, any building which has been designated an historical monument or is being considered as an historical monument by the Cultural Heritage Commission shall include the interiors and exteriors of any accessory building located on an historic site.

**8119.5.1.** Security measures that the Department may order shall include, but not be limited to, the following:

1. The installation of the maximum allowed height under this Code of chain-link perimeter fencing with top mounted horizontal pipe and razor wire, and at least one securely-locked pedestrian gate and the posting of "NO TRESPASSING" signs, pursuant to LAMC Section 41.24, at 25 foot (7.62 m) intervals.
2. Steel or plywood closures, with one-inch diameter air holes, installed at all doors and windows. (Sandwich panel installation shall be used so as to avoid drilling into window frames and sashes, doors, ornament or masonry units.)
3. The removal of all debris from the premises, including but not limited to wood, paper, cans, bottles and fecal matter.

Any temporary modifications required to be made to secure the building shall be reversible.

**8119.5.2.** Any plans or proposals for work required to be performed pursuant to an Order to Comply to secure any building from being further vandalized or from becoming a public nuisance must first be reviewed by the Cultural Affairs Department to ensure that any work done to secure the building will not damage or alter the historic character of the building. This review by the Cultural Affairs Department must be completed within ten working days from the date any request for review is submitted. The Cultural Affairs Department shall only disapprove a plan or proposal to secure a building if the work will significantly damage or alter the historic character of the building. If the work to be performed includes substantial alteration, the procedures set forth in LAAC Section 171.12 shall be utilized for review by the Cultural Affairs Department.

Failure to act upon a request for review within the time periods set forth herein shall constitute a waiver by the Cultural Affairs Department of the right to review plans or proposals for the work to be performed. Work ordered to be performed immediately pursuant to an Order to Comply, as determined by the Department, may be commenced and completed without prior review by the Cultural Affairs Department.

Nothing herein shall be interpreted to prohibit an owner from taking immediate temporary measures to secure a building from unauthorized entry.

**8119.5.3.** It shall be unlawful for any property owner to fail to comply with any Order to Comply issued by the Department under this provision.

**8119.5.4 Additional remedies – Notice of Intention.** In addition to the remedies provided by this Code, should an owner fail to comply with an Order to Comply, the Department may take the necessary measures, including those authorized under Sections 8903, 8904, and 8905, to immediately secure the property against vandalism or prevent it from becoming a public nuisance. Prior to taking these measures, the Department shall send a Notice of Intention to the owner pursuant to the provisions set forth in Sections 8903.3.3 and 8903.3.4.

Except for measures taken pursuant to Section 8905, when a Notice of Intention is issued under this section, the provisions of Section 8903.3.5 through and including Subsection 8903.4.3 shall also apply.

This provision is in addition to the remedies provided in Sections 8903, 8904, and 8905.

All costs incurred pursuant to this section shall be a personal obligation against the owner of the property, recoverable by the City in an action before any court of competent jurisdiction. These costs shall include an amount equal to 40 percent of the cost to perform the actual work, but not less than the sum of \$100.00, to cover the City's costs for administering any contract and supervising the work required. In addition to this personal obligation and all other remedies provided by law, the City may collect any judgment, fee, cost, or charge, including any permit fees, fines, late charges, or interest, incurred in relation to the provisions of this section as provided in LAAC Sections 7.35.1 through 7.35.8.



## CHAPTER 82

# CHANGE OF OCCUPANCY, USE AND RATING CLASSIFICATION

### SECTION 8201 GENERAL

Every change of occupancy, use and rating classification in any existing building or structure shall conform to the construction requirements for the group occupancy to be housed in the building or structure or for the use to which the building or structure is to be put, as set forth in Article 1.2, Chapter IX of the LAMC and Chapter 82.

### SECTION 8202 CHANGE OF RATING CLASSIFICATION

An existing building within the scope of Chapter 88 of this Code shall not be changed from one rating classification, as described in Section 8804, to another higher risk rating classification unless the building meets or is altered to meet the requirements of CBC Appendix Chapter A1 for the proposed rating classification and the building meets or is altered to meet the other requirements of this Code for the use or occupancy change.

**Exception:** An existing building within the scope of Chapter 88 of this Code shall not be changed from one risk category as defined in CBC Section 1604.5 to another higher risk category unless the building meets or is altered to meet the other requirements of this Code.

### SECTION 8203 CHANGE OF OCCUPANCY GROUP OR GROUP DIVISION

Every change of occupancy to one classified in a different group or a different division of the same group, as described in Chapter 3 of this Code, shall require a new Certificate of Occupancy whether or not any alterations to the building are required by this Code. For the purpose of this subdivision, the occupancy group and division of interconnected assembly rooms shall be based on the total occupant load in such rooms.

If the building or portion thereof does not conform to the requirements of this Code for the proposed occupancy group or division, the building or portion thereof shall be made to conform. The Department may issue a new Certificate of Occupancy without stating therein that all of the requirements of the Code have been met and without requiring compliance with all such requirements if it is found that the change in occupancy group or division will result in no overall increase in hazard to life, limb, health, property or public welfare.

### SECTION 8204 CHANGE OF USE

No change shall be made in the character of occupancies or use of any building that would place the building in a different division of the same group of occupancy 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 occupancy.

Any assembly occupancy in a building constructed prior to October 6, 1933, shall not be expanded or arranged to accommodate a larger number of occupants than that for which it was previously authorized by the Department unless the entire building conforms to the provisions of Chapter 16.

The Department may allow a change of use or increased occupant load within the same division of an occupancy group without requiring compliance with all the applicable requirements of the Code if it is found that the change in use or increased occupant load as well as any conditions established by the Department will not result in an overall increase in hazard to life, limb, health, property or public welfare.

### SECTION 8205 CERTIFICATE OF BUILDING COMPLIANCE

**8205.1 General.** If the owner of an existing building desires to determine whether the building is in compliance with applicable sections of Chapter IX of the LAMC for existing buildings, the owner may make application to the Department for a Certificate of Building Compliance.

**8205.2 Fees.** Before any application for such Certificate of Building Compliance is accepted, a fee shall be paid by the applicant to cover the cost to the City for the necessary inspection and report. The amount of the fee shall be as shown in Table No. 82-A.

**TABLE 82-A  
CERTIFICATE OF BUILDING COMPLIANCE INSPECTION FEE**

#### Residential Building\*

SECTION	FEE
Single-family dwelling or the first dwelling unit on the premises	\$185.00
Each additional dwelling unit on the premises up to four units total	\$105.00 per unit
Each dwelling unit in excess of four units	\$68.00 per unit
Each guest room or light-housekeeping room	\$47.00 per unit

\*Inspection of buildings accessory to the residential building shall be included as part of the inspection without an additional fee.

#### Nonresidential Buildings\*

AFFECTED FLOOR AREA	FEE
0 - 2,500 square feet	\$315.00
2,501 - 5,000 square feet	\$470.00
5,001 - 7,500 square feet	\$500.00
7,501 - 10,000 square feet	\$600.00
Each additional 10,000 square feet or fraction thereof	\$210.00

For SI: 1 square foot = 0.0929 m<sup>2</sup>.

\* Inspection of buildings accessory to the residential building shall be included as part of the inspection without an additional fee.

L **8205.3 Inspection procedures.** After the application has  
A been accepted, the Department shall cause an inspection to be  
L made and a report prepared. If, after taking into account non-  
A conforming rights, the inspection report indicates that any  
L building or portion thereof does not conform to the require-  
A ments of Chapter IX of the LAMC, that portion shall be made  
L to conform.

L When compliance has been secured, or if no corrections  
A are required as a result of the inspection report, the Depart-  
L ment will issue to the owner a Certificate of Building Com-  
A pliance stating that the building is now in substantial  
L compliance with the applicable provisions of Chapter IX of  
A the LAMC for existing buildings.

L The issuance of this certificate shall not be construed by  
L any person to be a representation, guarantee or warranty of  
A the premises for any purpose, including, but not limited to,  
L fitness, suitability, or freedom from defects, either latent or  
A patent. Nor is the issuance of this certificate to be construed  
L to be a waiver of any immunity provided to public entities  
A and public employees under state law, including, but not lim-  
L ited to, those immunities provided by Division 3.6 of Title 1  
A of the *California Government Code*.

## CHAPTER 83

# RELOCATION PERMIT

### SECTION 8301 GENERAL APPLICATION

**8301.1.** No person shall relocate or cause to be relocated any building or structure into or within the City without complying with the provisions of Chapters I and IX of the LAMC.

**8301.2.** Where a building or structure is to be relocated to a site outside the City, only the provisions of Sections 8302.1, 8302.3, 8303.3 and 8302.2.4 shall apply.

**8301.3.** The provisions of LAMC Section 93.0110 (Electrical Code), LAMC Subsection 94.103.1.1.2 (Plumbing Code) and LAMC Subsection 95.102.5 (Mechanical Code) shall apply to all buildings moved into or within the City.

### SECTION 8302 PERMITS REQUIRED – GENERAL CONSIDERATIONS

**8302.1 Board of public works - permission required.** No person shall move any building or structure, or any portion thereof, over, upon, along or across any street without a written permit therefor from the Board of Public Works. Such permit may be referred to as a “House Mover’s Permit” and shall be issued under the provisions of LAMC Sections 62.83.1 and 62.84.

**8302.2 Department of building and safety - security deposit and permit required.**

**8302.2.1.** No House Mover’s Permit shall be issued until the Department has first received a security deposit as required pursuant to Section 8305.

**8302.2.2.** If the building or structure is to be moved to a permanent site within City limits, no House Mover’s Permit shall be issued until the Department has first issued to the owner or person having legal control of the premises to which the building is to be moved, a permit to relocate the particular building upon those premises. Such permit shall be called a “Relocation Permit.”

**8302.2.3.** If the building or structure is to be moved to a temporary storage site within the City limits, no House Mover’s Permit shall be issued until the applicant furnishes evidence to the Department that the storage site is within the proper zone pursuant to the provisions of Article 2, Chapter I of the LAMC (Zoning Code) and that a Certificate of Occupancy for land use has been issued pursuant to the requirements of Section 12.26 E 2.

**8302.2.4.** If the building or structure is to be moved to a site outside City limits, no House Mover’s Permit shall be issued until the applicant furnishes evidence to the Department that the proposed location meets the requirements of the jurisdiction.

**8302.2.5.** Prior to issuance of a Relocation Permit, an inspection shall be required to investigate the condition of the building to be moved and to investigate the acceptabil-

ity of the proposed new location. Fees for such inspection shall be paid by the applicant as specified in Section 8308.

**8302.3 Department of building and safety - sewer-capping permit required.** Where a building or structure is to be removed from a lot within the City, no House Mover’s Permit shall be issued until the Department has first issued to the owner of such premises a permit to provide a watertight cap to the house connection sewer at the property or sewer easement line.

**8302.4 Building relocation conditions.**

**8302.4.1.** An apartment house or dwelling moved into or within the City and all other buildings moved within the City may retain the existing materials and methods of construction, provided that in the new location the building conforms to the requirements of this Code with respect to fire district requirements, under floor ventilation and clearance, underpinning, footings, foundations, occupancy requirements, and fire safety standards and does not become or continue to be a substandard residential building.

A substandard residential building and any building other than an apartment house or dwelling moved into the City shall be made to conform to all of the requirements of this Code for a new building in the same location within the City and to all other applicable laws.

**8302.4.2.** The Department may, in granting any relocation permit, impose such terms and conditions it deems reasonable and proper, including, but not limited to, the requirements of maintenance corrections, alterations or repairs to be made to the building or structure so that the relocation thereof will not be materially detrimental or injurious to public safety or to public welfare or to the property and improvements within a radius of 1,000 feet (304.8 m) from the site to which it is be relocated.

### SECTION 8303 PERMIT APPLICATION – PLANS AND SPECIFICATIONS

**8303.1.** Every application to the Department for a relocation permit shall be in writing upon a form furnished by the Department and shall set forth such information as the Department may reasonably require in order to carry out the purposes of this chapter.

**8303.2.** Each such application shall be signed by the person owning or having legal control of the site upon which the building or structure is to be relocated, and prior to any appeal or the issuance of any permit there shall be filed fully delineated working drawings, electrical and mechanical plans and complete specifications. Such working drawings, plans and specifications shall show all new construction, materials, fixtures and fittings and any alterations, repairs or additions to be made to existing construction. Such plans shall also

include floor plans, elevations and necessary construction details so as to show conformity with the intent of this section. Such drawings, plans and specifications shall, in addition to the requirements of LAMC Subsection 106.3.3, show all site preparation, grading and improvements.

The applicant shall assume all responsibility for the preparation and completeness of said plans. In the event the City elects to complete the building or to demolish the building under the provisions of the Municipal Code, the City reserves the right to interpret errors or omissions or supply missing information on the plans. The City shall not be responsible for the performance of the work done under any contract entered into to complete or demolish the building.

**8303.3.** Any lot within the City from which a building or structure is moved shall be cleared of all debris resulting from such removal. The footings and foundation walls shall be removed to grade and the lot shall be graded as necessary to provide drainage to a street, gutter or other approved location. A demolition permit shall be secured by the owner to authorize this work.

#### **SECTION 8304 SPECIAL CONDITIONS UNDER WHICH A PERMIT WILL NOT BE ISSUED**

No permit shall be issued to relocate any building or structure, if any one of the following conditions exist:

1. It is unfit for human habitation or is so dilapidated, defective or in such condition of deterioration or disrepair that its relocation to the proposed site would cause appreciable harm or be materially detrimental to the property or improvements in the neighborhood within a radius of 1,000 feet (304.8 m) from the proposed site.
2. Because of age, size, design, architectural treatment or proposed location on the lot, the building does not substantially conform to the general design, plan, location on the lot and construction of the buildings located in the neighborhood within a radius of 1,000 feet (304.8 m) from the proposed site so that its relocation would be materially detrimental to the property or improvements in said neighborhood.
3. The proposed use is prohibited by the zoning laws of the City.
4. Whenever the applicant is currently in default, as determined by the Department, on one or more Relocation Permits.

#### **SECTION 8305 GUARANTEE OF COMPLETION REQUIRED**

**8305.1 Relocation permit.** No relocation permit shall be issued unless the applicant therefore shall first post with the Department a bond in an amount equal to the cost of the work required to be done, plus an additional 25 percent, guaranteeing compliance with all conditions of the permit and completion of all work described in the plans and specifications therefor, as estimated by the Department. The applicant may post either a surety bond or cash bond or negotiable United

States Treasury Certificates of the kind approved by law for securing deposits of public money.

The bond shall be executed by the applicant as principal and, if a surety bond, shall also be executed by a corporation authorized to act as surety under the laws of the state of California. The bond shall be a joint and several obligation and shall be conditioned upon the faithful performance of all terms and conditions of the permit and of all work described in the plans and specifications therefor to the satisfaction of the Department. The bond shall contain the further conditions that should the applicant fail to complete all such work within the time specified on the permit, the City may, at its option, cause all of such work to be done or completed in accordance with the terms and conditions of the permits and the plans and specifications therefor on file with said Department, or demolish the building.

The parties executing the bond shall be firmly and continuously bound for the payment of all the costs necessary to complete the work or demolish the building under all terms and conditions of the bond. The cost shall include the cost to complete the work or demolish the building, including any cost to monitor or remove asbestos, plus an amount equal to 40 percent of the cost to cover the cost to the City of administering the contract and supervising the work required.

Whenever the applicant elects to deposit cash or approved negotiable United States Treasury Certificates, the City shall be authorized in the event of any default on the part of the applicant to use any or all of the cash or approved negotiable certificates to cause the work to be done and for the payment of all costs thereof. The term of the bond shall begin on the date of the deposit of the cash or negotiable certificates or the filing of the surety bond, and shall end upon the date of the completion to the satisfaction of the Department of all such work. The fact of such completion shall be evidenced by a written statement thereof signed by the Superintendent of Building and thereafter the cash deposit or certificate shall be returned to the applicant, or the surety bond released, as the case may be.

Whenever the City elects to cause the work to be done because of the applicant's default, the amount of the deposit or certificates in excess of all cost of the work completed by or on behalf of the City shall be returned to the applicant after the work has been so approved.

**Exception:** No bond need be posted in any case where the Department shall determine that the only relocation involved is that of moving a building temporarily to the regularly occupied business premises of a house mover, or that of moving a building to adjacent property of the same owner. The exceptions herein made shall not apply unless the Department further finds that no such security is necessary in order to assure compliance with the requirements of this section.

**8305.2 Security deposit.** No House Mover's Permit shall be issued to any house mover pursuant to the terms of the Sections 62.62 to 62.93, inclusive, until the applicant therefor shall have deposited with the Department a security deposit of \$2.00 per square foot of total floor area of all buildings, as stated in the application provided for in Subsection A of LAMC Section 62.84.



In lieu of the specific deposit for each application, any house mover may make and maintain a general deposit in the sum of \$3,000.00 which shall be used for the same purposes as the specific deposit mentioned in this section.

If, for any reason, the move as authorized by the House Mover's Permit is not completed within 30 days of the date of issuance and it becomes necessary for the Department to either remove or demolish the building or structure, the cost of so doing plus an administrative fee of 40 percent shall be deducted from the aforementioned deposit. The remainder of such deposit, if any, shall be refunded to the person making such deposit, or to his or her assigns.

In case the deposit shall not be sufficient to pay the cost of removal or demolition, or the costs of repairs, if any, the person making such deposit shall, upon demand, pay to the Department a sufficient sum to cover all such cost. Upon failure to pay such sum, it may be recovered by the City in any court of competent jurisdiction.

#### **SECTION 8306 TERMS OF PERMIT**

Every relocation permit issued under the provisions of this section shall contain each and every term and condition imposed by the Department; shall be valid for a period not to exceed 120 days, unless extended by said Department or by the Board, unless an appeal is made to it under Subsection 98.0403.2, and shall become null and void without further notice or order upon the expiration of such time or any extension thereof, or upon any default in the performance of any of the aforesaid terms or conditions.

#### **SECTION 8307 DEFAULT IN PERFORMANCE OF CONDITIONS OR TERMS OF PERMITS – FAILURE TO COMPLETE**

**8307.1** Whenever the Department finds that:

1. A building has not been lowered onto its foundation within 60 days after issuance of the relocation permit; or
2. A default has occurred in the performance of any term or condition of the relocation permit; or
3. The applicant has failed to complete the work required as specified by the permit, plans and/or specifications approved for the project within the time prescribed, the Department shall be authorized to give notice to the applicant and to the surety, if any, to complete the work or perform the condition within a specified additional time, not to exceed 60 days. Such notice shall be served upon the applicant and the surety, if any, by certified mail, and shall be deemed to have been so served when placed in the United States mail, postage prepaid and addressed to such person. No person shall fail or refuse to comply with such notice. However, such notice may be complied with by demolishing and removing the building or structure and restoring the site within the time prescribed, at the option of the applicant or the surety, as the case may be.

**8307.2.** If the applicant or the surety fails or refuses to comply with any notice within the time prescribed, the Department shall be authorized to cause the building or structure to be demolished or the work to be completed, whichever it shall determine is reasonable under the circumstances, without further notice or order. The cost of completing the work or demolishing the building, including the cost of any monitoring or removal of asbestos, plus the 40 percent administration and supervision cost, shall be paid for out of the cash deposit or negotiable United States Treasury Certificates posted with the Department, or from the Repair and Demolition Fund, if no deposit or certificate has been posted. All sums used for this purposes out of the Repair and Demolition Fund shall be recovered from the surety under the surety bond provided for above. Any work to be performed by the Department under the provisions of this section shall be done in accordance with the established public works practices of the City of Los Angeles. If the Department uses any money in the Repair and Demolition Fund for the completion or demolition of any building under the provisions of this section, the Department shall notify the surety, and the surety shall immediately thereafter reimburse the City therefor under the surety bond. The City Attorney is authorized to and shall institute any action necessary to the recovery of the money under the surety bond provided for above.

#### **SECTION 8308 PERMIT FEES**

**8308.1.** Before any application for a Relocation Permit is accepted, a fee shall be paid by the applicant of the cost to the City for the investigation of the condition of the building to be moved and the inspection of the proposed new location. The amount of the fee shall be as shown in Table 83-A for each main building or for the first accessory building where no main building is to be relocated.

Where an accessory building, in addition to a main building or the first accessory building where no main building is to be moved, is to be relocated from the same location to the same site at the new location, an application fee of \$80.00 shall be paid for each such accessory building.

**8308.2.** In the case of a building located outside the City limits of the City, an additional fee of \$525.00 shall be paid for each application. In addition to the fee, a mileage charge of 65 cents per mile (1609 m) shall be paid for any inspection which is made 10 miles (16093 m) or more beyond City limits. Mileage shall be measured in a straight line from the point 10 miles (16093 m) beyond the City limits which is nearest to the location of the building to be inspected, to the location of the building, and return to said point of departure.

**8308.3.** The application fees required by Sections 8308.1 and 8308.2 shall be in addition to the regular building permit fee required by Section 107.2.

**8308.4.** Should a relocation permit be denied by the Department solely because the proposed relocation site is not approved, the applicant may, with the consent of the Department, file within six months of the date of the original application an amended application for approval of a new proposed site. An additional fee of \$300.00 for each such

## RELOCATION PERMIT

amended application will be charged. If a relocation permit is not obtained within six months after the original application fee is paid, a new application shall be filed and a new application fee paid before the relocation permit is issued.

**8308.5.** The provisions of this subsection shall not apply to the relocation of temporary buildings or structures to be used by a governmental agency for a governmental purpose.

### SECTION 8309 ENTRY UPON PREMISES

**8309.1.** The Department, the surety, and the duly authorized representatives of either, shall have access to the premises described in the relocation permit for the purpose of inspecting the progress of the work.

**8309.2.** In the event of any default in the performance of any term or condition of the relocation permit, the surety, or any person employed or engaged on its behalf, or the Department, or any person employed or engaged on his or her behalf, shall have the right to go upon the premises to complete the required work or to remove or demolish the building or structure.

**8309.3.** It shall be unlawful for the owner or the owner's representatives, successors or assigns, or any other person, to interfere with or obstruct the ingress or egress to or from any such premises of any authorized representative or agent of any surety or of the City engaged in the work of completing, demolishing or removing any building or structure for which a relocation permit has been issued after a default has occurred in the performance of the terms or conditions thereof.

**TABLE-A  
BASIC RELOCATION APPLICATION FEE SCHEDULE**

FLOOR AREA OF BUILDING	FEE
0 - 2,500 square feet	\$770.00
2,501 - 5,000 square feet	\$1160.00
5,001 - 7,500 square feet	\$1350.00
7,501 - 10,000 square feet	\$1535.00
Each additional 10,000 square feet	\$300.00

For SI: 1 square foot = 0.0929 m<sup>2</sup>.

## CHAPTER 85

# ALTERNATIVE BUILDING STANDARDS FOR JOINT LIVING AND WORK QUARTERS

### SECTION 8501 GENERAL

**8501.1 Purpose.** The purpose of this chapter is to provide alternative building standards for the conversion of Existing Buildings, or portions thereof, from commercial or industrial uses to Joint Living and Work Quarters. The alternative standards are designed to provide a reasonable level of safety to the building occupants, and are in conformance with the provisions of *California Health and Safety Code Section 17958.11*.

**8501.2 Application.** Nothing in this chapter shall be construed to allow the reduction of the seismic or fire and life safety elements of an Existing Building, where such elements provide a greater level of protection than the minimum requirements established by this chapter.

The alternative building standards of this chapter may be applied when the commercial or industrial uses in an Existing Building are converted (change of use or occupancy) to Joint Living and Work Quarters provided:

**A. General Fire and Life Safety Requirements for All Existing Buildings.** All Existing Buildings that are converted to Joint Living and Work Quarters shall comply or be made to comply with all of the building area, height, number of stories, type of construction, occupancy, means of egress and other fire and life safety requirements of this Code for a new building of the same use or occupancy, except as provided in this chapter.

**B. Structural Requirements for all Existing Buildings.** For all existing buildings, the change of occupancy or use of any portion of an Existing Building to a Joint Living and Work Quarters may be permitted provided the entire building complies or is made to comply with all the structural requirements in Section 8502.12 of this Code.

**8501.3 Definition.** For the purpose of this Chapter, certain terms are defined as follows:

**ARTIST-IN-RESIDENCE.** An artist or artists using a space within a building for combined living and artistic working purposes.

**EXISTING BUILDING.** A building for which a building permit was issued prior to April 1, 1994.

**FEMA 352, "RECOMMENDED POST-EARTHQUAKE EVALUATION AND REPAIR CRITERIA FOR WELDED STEEL MOMENT-FRAME BUILDINGS."** The June 2000 edition prepared by the partnership of the Struc-

tural Engineers Association of California, the Applied Technology Council, and the California Universities for Research in Earthquake Engineering (SAC) Joint Venture for the Federal Emergency Management Agency, Washington, DC.

**JOINT LIVING AND WORK QUARTERS.** A residential occupancy of one or more rooms or floors used as a dwelling unit with adequate work space reserved for, and regularly used by, one or more persons residing there pursuant to Health and Safety Code (H&S) Section 17958.11(a).

**QUALIFIED HISTORICAL BUILDING.** Any building deemed of importance to the history, architecture or culture of any area by an appropriate local, state or federal governmental jurisdiction. This shall include designated buildings on, or determined eligible for, official national, state or local historical registers or official inventories, such as the National Register of Historic Places, California Register of Historical Resources, State Historical Landmarks, State Points of Historical Interest, and officially adopted city or county registers, inventories, or surveys of historical or architecturally significant sites, places or landmarks.

**STATE HISTORICAL BUILDING CODE.** A set of code standards known as Part 8, *Title 24 of the California Code of Regulations and published as the California Historical Building Code*.

**8501.4 General.** A Joint Living and Work Quarters shall not be used for public sales purposes or for instructional classes when either is inconsistent with residential use. No hazardous activities such as, but not limited to, welding, open flame, or storage of flammable liquids shall occur in the Joint Living and Work Quarters.

**Exception:** In buildings three stories or less in height, activities such as welding, open flame, or minimal storage of flammable liquids may be allowed provided written approval is obtained from the Fire Department.

All buildings containing a Joint Living and Work Quarters shall have a sign posted in a conspicuous location at each entrance to the building. The sign shall be constructed of a durable weatherproof material and shall meet the requirements of Los Angeles Fire Department Standard No. 58. In the lower white diamond of the sign, a red colored letter "A" shall be placed so as to meet the size and letter thickness specified in the Los Angeles Fire Department Standard No. 58.

If any portion of an Existing Building is converted to a Joint Living and Work Quarters, then the entire building, including any portion not being converted, shall comply with all code requirements for a new building of the same use and type of construction except as provided in this chapter.

## SECTION 8502 ALTERNATIVE STANDARDS

**8502.1 Use or occupancy.** When applying this chapter, Joint Living and Work Quarters shall be classified as Group R-2 occupancy and comply with all Group R-2 occupancy requirements of this Code, except as provided in this Chapter.

**8502.1.1 Ceiling height.** Existing ceiling height within a Joint Living and Work Quarters may be maintained, provided the ceiling height is not less than 7 feet (2133.6 mm), except that the ceiling height above a mezzanine may be 6 feet 6 inches (2011.68 mm) to any structural projections from the ceiling.

**8502.1.2 Emergency escape.** Every room below the fourth story where occupants sleep in Joint Living and Work Quarters shall be provided with an emergency escape or rescue window or door, which complies with the requirements of CBC Section 1030.

**Exception:** The emergency escape or rescue window or door may open directly into an existing court, provided:

- A. The court is accessible to the Fire Department.
- B. The court is provided with a minimum of one direct exit to a corridor, exit stairway, exit passageway, exterior exit stairway, exterior exit balcony, or exterior exit ramp, or existing fire escape. The existing fire escape shall be structurally sound and shall not serve as an exit for an assembly use.
- C. All openings in walls surrounding the court shall be protected as required by CBC Section 705.3 or be provided with an approved water curtain.

**8502.2 Exterior wall and exterior opening protection.** Existing construction of the exterior walls may be maintained without complying with current exterior fire resistive wall construction.

Existing unprotected exterior openings, which are not allowed or are required to be protected due to their proximity to a property line, may be maintained without complying with the requirements of CBC Section 705.8 provided the openings are protected with an approved water curtain. Openings in the exterior walls that are not allowed by CBC Section 705.8 due to their proximity to a property line, may not be used to satisfy other code requirements, such as light and ventilation, smoke control or emergency escape.

**8502.3 Smoke control system.** Existing high-rise buildings shall provide a smoke control system in all portions of the building including basements. The smoke control system shall meet the requirements of CBC Section 909 or all the requirements of this section.

**Exception:** The following areas are exempt:

- A. New or existing rooms less than 50 square feet (4.64 m<sup>2</sup>) in area.
- B. New or existing rooms located at or above grade level provided the room has a direct exit to the exterior of the building.

C. Floor levels with operable windows or breakable tempered glass panels in the exterior walls. The area of the operable windows or breakable tempered glass panels shall be a minimum of 20 square feet (1.86 m<sup>2</sup>) in area. The operable windows or breakable tempered glass panels shall be located in the exterior walls around the perimeter of the floor no more than 50 linear feet (15.24 m).

**8502.3.1 Capacity.** Smoke-control systems shall provide at least six air changes per hour for all areas within the building including basements, provide exhaust to the exterior of the building, and provide an adequate makeup air supply that is uniformly distributed.

**8502.3.2 Smoke dampers.** If a smoke-control system serves more than one floor, then smoke dampers shall be installed in the main exhaust air ducts and the main supply air ducts serving each floor and shall comply with the activation requirements of CBC Section 717.3.3. The smoke dampers shall be installed in a manner that will prevent the movement of smoke from one floor to another floor when the dampers are closed. The vertical risers of the main exhaust air duct shall be installed in metal ducts complying with the requirements for product-conveying ducts in Chapters 5 and 6 of the Mechanical Code.

In the firefighter's control panel, all smoke dampers within the same smoke-control zone shall be actuated by one On-Auto-Off switch in accordance with CBC Section 909.16.3, except that an alternate actuation method may be allowed when approved by both the Fire Department and the Department.

Combination fire and smoke dampers shall be listed to conform to UL 555 and UL 555S and smoke dampers shall be listed to conform to UL 555S and they shall be accessible for inspection, service and repair. Pneumatic tubing to operate these dampers shall be of noncombustible materials.

**8502.3.3 Firefighter's control panel.** The firefighter's control panel shall comply with all the requirements of CBC Section, 909.16, except that graphically depicted representation of the building may be omitted when accepted by the Fire Department. The firefighter's control panel shall monitor and be capable of overriding the Mechanical Test Panel. The Mechanical Test Panel is a separate control panel that provides controls and displays the status of the ventilation fans, dampers, and other smoke control devices as required by CBC Section 909 and shall be located in the same room as the Firefighter's Control Panel.

**8502.3.4 Performance test.** Upon completion and before final approval of the installation of a smoke-control system required by this Code, a smoke control performance test, complying with the testing procedures of CBC Section 909.18, shall be used to verify the rate of air-flow and proper operation as specified in this chapter. Tests shall be conducted in the presence of both the Fire Department and the Department.

Prior to conducting the required smoke control performance test, a preliminary performance report shall be sub-

mitted to the Department by a person, holding a Certificate of Qualification as required by CBC Section 909.18, verifying that the performance criteria of the Department have been met.

**8502.3.5 Additional smoke control requirements.** Existing air conditioning and ventilation systems may be used as part of the smoke-control system. Existing return air plenum and approved fiberglass air ducts may be used as part of the smoke-control system. A smoke exhaust system shall be designed in a manner that will prevent smoke from going from one room to another, except when two or more rooms are connected together by means of a permanent unobstructed opening at least 20 square feet with a minimum three feet dimension, then the rooms shall be considered as one room for the purpose of designing the smoke-control system.

**8502.4 Fire-extinguishing system.** Fire sprinkler system, standpipe system, and water storage tank shall be provided as required for a new building of the same height, type of construction and occupancy, except that a high-rise building for which a building permit was issued prior to July 1, 1974 may comply with the fire safety standards of Section 8604 of this Code.

The fire sprinkler system, if required, shall be installed in accordance with NFPA 13 as adopted by the Plumbing Code.

**8502.5 Fire alarm system.** If a fire alarm system is required by CBC Section 907.2.9 or 403.4.2 for a new building of the same type of construction and occupancy, or installed at the option of the owner, then the entire building shall have fire alarm systems that are in full compliance with CBC Section 907.2.9. In a high-rise building, the fire alarm systems shall be supplied by a generator used as an emergency system in accordance with CBC Section 403.4.8. For all other buildings, an alternate source of power may be used provided it is approved by both the Fire Department and the Department.

High-rise buildings shall be provided with a central control station (fire command center) that complies with all the requirements of CBC Section 403.4.6 and LAMC Section 57.508, including the minimum room dimensions of 10 feet (3048 mm).

**8502.6 Fire pumps and generator (combustion engines and gas turbines) rooms.** In high-rise buildings, diesel or/and electric fire pumps shall be provided as required for a new building, except that a high-rise building for which a building permit was issued prior to July 1, 1974 may comply with Section 8604.6.5.

Fire pump and generator (combustion engines and gas turbines) rooms shall be separated with a minimum one hour occupancy separation from adjoining rooms and from each other.

Combustion air and room ventilation air shall be required by the Building and Mechanical Codes, except that the room ventilation exhaust may be considered as environmental air.

In rooms containing diesel fire pumps and generators, a flue venting system shall be provided which complies with

the requirements of Chapter 8 of the *Los Angeles Mechanical Code*, except that:

- A. Clearance from the flue venting system to any combustible material may be reduced to 6 inches (152.4 mm) if the vent is wrapped with an approved insulation equivalent to two hour fire-rated assembly for high-rise buildings and one hour fire-rated assembly for all other types of buildings, and
- B. The flue venting system may terminate at the exterior wall when installed in compliance with the exhaust system termination in NFPA 37, *Standard for the Installation and Use of Stationary Combustion Engines and Gas Turbines*.
- C. The flue venting system may terminate under the roof overhang, provided the exhaust outlet is located lower than the overhang by a distance equal to the projection of the overhang.

**8502.7 Means of egress.** The portion of the building converted to a Joint Living and Work Quarters shall be provided with means of egress as required by Chapter 10 of this Code for a new building, except that the alternative requirements of Sections 8502.7.1 through 8502.7.5 may be used in lieu of the requirements in Chapter 10 of this Code. An existing fire escape which is in good operating condition, may be used as a second means of egress, provided the fire escape does not serve as an exit for an assembly occupancy.

**8502.7.1 Corridors.** All public corridors serving the occupants of the Joint Living and Work Quarters shall comply with all the requirements of CBC Section 1020, except as follows:

1. Existing nonconforming fire-resistive walls and ceiling of a corridor constructed of wood lath and plaster, which are in good condition, may be acceptable as equivalent to the required one-hour fire-resistive construction.
2. Existing doors between the corridor and the Joint Living and Work Quarters that are part of the historic fabric of a Qualified Historical Building may be allowed to remain, provided approved smoke gaskets and self-closing and latching devices to prevent smoke penetration are installed on the door, or the existing door shall be replaced with a door conforming to the requirements of CBC Section 716.2.2.1.

**8502.7.2 Dead-end corridors.** An existing dead-end corridor which exceeds 20 feet (6.09 m) in length and serves the occupants of a Joint Living and Work Quarters may remain, provided the dead-end corridor complies with all of the following:

- A. The dead-end corridor shall be constructed as described above in Section 8502.7.1 for the full length of the dead-end corridor.
- B. The dead-end corridor shall not exceed 40 feet (12.192 m) in length.
- C. A door with a magnetic hold-open device shall be placed across the corridor to create a vestibule located furthest from the open end of the dead-end

corridor. The placement of the door shall be located not more than 20 feet (6.09 m) from the open end of the dead-end corridor and the occupant load of the vestibule shall be less than 10 occupants.

**8502.7.3 Means of egress illumination and exit signs.**

Means of egress illumination, exit signs, floor-level exit signs and exit path markings serving a Joint Living and Work Quarters shall comply with CBC Sections 1013, and 1008.

**8502.7.4 Exit stairway.** All exit stairways shall be enclosed and shall comply with all the requirements of CBC Section 1023. Existing exit stairway enclosures may be allowed to pass through the first-floor elevator lobby, provided an approved fire-rated smoke-sealed door is placed in front of the elevator door on the first floor or there is another exit stairway enclosure leading directly to the public way.

**8502.7.5 Pressurization of exit stairway enclosure.** If pressurization of exit stairway enclosure is required, then a mechanical ventilation system shall be provided. The mechanical ventilation system shall provide a uniform air velocity of not less than 50 feet (15.24 m) per minute while maintaining a positive pressure (not exceeding 25 pounds force on an interior door) relative to the adjacent areas and discharging this air to the outside of the building.

The mechanical ventilation system shall be activated simultaneously with the fire sprinkler system or the smoke detector system. The mechanical ventilation system shall be supplied with primary and secondary sources of power. The primary power shall be provided by the power system supplied by the public utilities. The secondary power shall be from an approved standby source complying with the Electrical Code.

**8502.8 Accessibility (disabled access).** The conversion of an Existing Building or portion thereof to a Joint Living and Work Quarters shall be in compliance with the accessibility standards of CBC Chapters 11A and/or 11B, whichever is applicable.

**8502.9 Interior environment.** All habitable rooms in the Joint Living and Work Quarters shall be provided with natural light and ventilation by means of exterior glazed openings.

**8502.9.1 Light.** Windows or skylights with a total area not less than one fifteenth of the floor area of the room may be used to satisfy the natural light requirements. Kitchens may be provided with artificial light. In lieu of required exterior glazed openings, artificial light may be provided in accordance with CBC Section 1204.3.

**8502.9.2 Ventilation.** Habitable rooms shall be provided with natural ventilation by means of openable exterior openings with an area of not less than one thirtieth of the floor area of the room. In lieu of required openable exterior openings, a mechanical ventilation system in accordance with the California Mechanical Code may be provided.

Public corridors or hallways shall be provided with an adequate ventilation system when all the habitable rooms in the Joint Living and Work Quarters on the floor do not

have openable exterior openings that comply with the requirements of CBC Section 1202.1.

An adequate ventilation system for the public corridors shall mean either an operable exterior window or a permanent exterior opening having a minimum area of 5 square feet (.046 m<sup>2</sup>), or a mechanical ventilation system that complies with the requirements of Section 8502.14 and CBC Section 1203.1.

**8502.9.3 Light and ventilation court.** A window may open into an existing court for light and ventilation, provided, the court has adequate access at the bottom of the court for cleaning purposes. Every court more than two stories in height shall be provided with a horizontal air intake at the bottom of the court from the court to the exterior of the building, unless the court opens to a yard or public way.

The horizontal air intake shall not be less than 10 square feet (.929 m<sup>2</sup>) in cross-sectional area and shall lead to the exterior of the building. The construction of the horizontal air intake shall be as required for the court walls of the building, but in no case shall be less than one-hour fire-resistive construction. A mechanical ventilation system complying with the Mechanical Code may vent the court in lieu of the horizontal air intake.

**Exception:** When approved by the Superintendent of Building, an existing court may be deemed adequate for the purpose of providing light and ventilation based upon the area and height of the court.

**8502.10 Sound transmission insulation.** Existing construction may remain without complying with the sound transmission insulation requirements for any newly created Joint Living and Work Quarters. All new construction shall comply with sound transmission requirements of CBC Section 1206.

**8502.11 Energy conservation.** All new HVAC and new lighting systems shall comply with the current energy conservation requirements contained in Part 6 of Title 24 of the California Code of Regulations (*California Energy Code*). An Existing Building with a Joint Living and Work Quarters need not comply with the Building Envelope requirements of the *California Energy Code*, if the Building Envelope is not altered in anyway due to compliance with other code requirements.

**8502.12 Structural design requirements (seismic provision).** The conversion of any portion of an Existing Building to a Joint Living and Work Quarters shall be analyzed for 75 percent of the Design Earthquake Ground motion, as defined in CBC Section 1613.2 and as specified in CBC Section 1613.3, but in no event shall there be a reduction in the capacity of the seismic force resisting system where that system provides a greater level of protection than the minimum requirements established by this chapter.

**Exception:** Unreinforced Masonry Bearing Wall Buildings (URM). The conversion of any portion of an existing URM building shall comply with of Appendix Chapter A1 of Part 10 of the California Code of Regulations Title 24 (*California Existing Building Code*).

Performance-based engineering analysis and design procedures may be used to evaluate the existing structure and the design of strengthening elements when approved by the Superintendent of Building. All structural elements of the building shall be strengthened to meet the minimum design analysis as specified in Sections 8502.12.1 through 8502.12.3 or new structural elements shall be added when required. All new structural elements shall meet current detailing requirements of CBC Section 1604.

Other types of buildings not mentioned in this section, such as Steel Frame Buildings with Semi-Rigid Beam-Column Connections, Dual Systems with Steel Moment Frames and Concrete Shear Walls, or Steel Frame Buildings with Steel Bracing, shall comply with the standards developed by the Department.

**8502.12.1 Reinforced concrete buildings and concrete frame buildings with and without masonry infill walls.** Reinforced concrete buildings or concrete frame buildings with or without masonry infill walls and that are within the scope of Section 9502, shall comply with all the provisions of Chapter 95 of this Code.

**8502.12.2 Steel frame buildings with masonry infill walls.** Steel frame buildings with masonry infill walls shall be made to comply with the standards as developed by the Department and all the relevant provisions of the *Los Angeles Existing Building Code*.

**8502.12.3 Welded steel moment-frame (WSMF) buildings.** All buildings constructed prior to March 7, 1995 utilizing WSMF as their primary lateral force resisting system shall be evaluated by the standards developed by the Department.

All existing WSMF buildings, which have experienced greater than 0.25g-peak ground acceleration and which were constructed prior to March 7, 1995, shall be evaluated using procedures and repair criteria of FEMA 352, "Recommended Post-earthquake Evaluation and Repair Criteria for Welded Steel Moment-Frame Buildings." An engineering report shall be submitted to the Department. The engineering report shall either substantiate that the existing steel moment framed connections are in good condition, or recommend repair procedures for the welded steel moment-frame connections that are cracked or otherwise compromised.

**8502.13 Electrical systems.** All electrical systems and installations for a Joint Living and Work Quarters and other alterations in adjoining areas shall be designed in accordance with the Electrical Code except that the general lighting in the Joint Living and Work Quarters shall be installed based on the unit load of 4.0 volt-amperes per square foot. The load calculation and wiring installation in a Joint Living and Work Quarters shall be as required for the residential occupancy.

**8502.14 Mechanical systems.** All mechanical systems shall comply with the requirements of the Mechanical Code.

**8502.15 Elevators.** Existing elevators need not comply with the requirements of Chapter 30 of the LABC, except where required to comply with the State Elevator Safety Order of Subchapter 6, of Chapter 4, Division 1 of Title 8 of the California Code of Regulations.

**8502.16 Historical building provisions.** Qualified Historical Buildings may use the State Historical Building Code.





## CHAPTER 86

# SPECIAL PROVISIONS FOR EXISTING BUILDINGS

### SECTION 8601 GENERAL

In addition to the general requirements of Chapter 81, every building housing occupancy classifications specified in a section of this Chapter shall conform to the section requirements.

### SECTION 8602 GROUP E OCCUPANCIES

**8602.1 Scope.** This section shall apply to every lawfully existing Group E Occupancy housed in a building constructed prior to July 1, 1961.

#### **8602.2 Certificate of occupancy.**

**8602.2.1 Revocation.** The Certificate of Occupancy for any lawfully existing Group E Occupancy housed in a building constructed prior to July 1, 1961, may be revoked by the Department as follows if, upon inspection, the building is found in violation of requirements of this section:

1. If the violations, defects or hazards found to be existing therein are immediately dangerous to the public health, safety or general welfare, and if effective repair is not commenced within 180 days after the issuance of an order to do so by the Department; or
2. If the violations, defects or hazards found to be existing therein are not of such a nature as described hereinabove, and effective repair is not commenced within five years after the issuance of an order to do so by the Department.

**8602.2.2 Issuance.** A new Certificate of Occupancy shall be issued for any lawfully existing Group E Occupancy housed in a building constructed prior to July 1, 1961, if such building is either made to comply with all of the requirements of this chapter, or is made to comply with the requirements of Sections 8602.6 or 8602.7 and 8602.8.

**8602.3 Other laws.** Except as otherwise specifically provided for herein, this section does not repeal, alter or modify any other provisions of this Code.

**8602.4 Violation.** It shall be unlawful for any person to use or permit the use of any building for a Group E Occupancy:

**8602.4.1.** After a Certificate of Occupancy has been revoked in accordance with the provisions of Section 8602.2 after July 1, 1961;

**8602.4.2.** In any case where a Certificate of Occupancy has not been issued, unless the building is constructed in full conformity with all other applicable provisions of this Code; or

**8602.4.3.** Unless such building is constructed, operated, used and maintained as required by this section.

**8602.5 Alternate methods.** The Department may, after referral to and report from the Fire Department, approve alternate methods of obtaining the equivalent fire protection and safety

required by this section, provided the Department finds that the existing condition of the building under consideration makes strict conformity impracticable and that such alternate methods are within the purpose and intent of this section.

**8602.6 One-story buildings.** One-story buildings shall conform to the requirements of this section and CBC Section 305.

#### **8602.7 Buildings over one story.**

**8602.7.1.** Type V buildings two stories or more in height shall not be used to house Group E Occupancies unless such buildings are completely sprinklered.

**Exception:** Complete sprinklers are not required where the Group E Occupancy is only in the first story of a two-story building and the Group E Occupancy conforms to the requirements of a one-story building as set forth in this section.

**8602.7.2.** Every building over one story in height shall have sprinklers installed in all hallways, stair shafts, stairways, basements, laboratory and vocational rooms, and other usable areas not customarily used for class, toilet or assembly purposes.

#### **Exceptions:**

1. The Department may, after referral to and report from the Fire Department, modify the above requirement, provided it is first found that equivalent alternate safety measures are provided.
2. Sprinklers may be omitted, provided every room used for instruction purposes or assembly is provided with exits giving direct egress to the exterior of the building.

**8602.7.3.** A sprinkler system required under the provisions of this part shall be electrically interconnected to the building fire alarm system.

#### **8602.8 General.**

**8602.8.1.** All requirements of this Code with respect to exits shall be complied with.

#### **Exceptions:**

1. The provisions of CBC Section 713 which require shaft enclosures need not be complied with, provided the provisions of this Section are met.
2. Every boiler using liquid or solid fuel shall be housed in a boiler room separated from the remainder of the building by two-hour fire-resistive construction with openings protected by a fire assembly having a one-and-one-half-hour fire-resistive rating.
3. Every boiler using fuel gas shall be housed in a boiler room separated from the rest of the building by one-hour fire-resistive construction with openings protected by a fire assembly having a one-hour fire-resistive rating.

4. Each gas piping system serving a Group E Occupancy shall be provided with a gas shutoff valve designed to close the flow of gas to the piping system and a label designating such valve. The label shall be of corrosion-resistant metal with letters at least three inches high, stating: "GAS SHUT-OFF VALVE".
5. Any fire-warning system required to be installed by the Los Angeles Fire Department pursuant to the provisions of Article 7, Chapter V of the LAMC shall meet the requirements of Article 760 of the *California Electrical Code* adopted by the City.

## SECTION 8603 FIRE PROTECTION – WARNING SYSTEM

### 8603.1 Group R, Division 1 and Division 2 Occupancies.

**8603.1.1 Existing residential building.** Except as otherwise provided in Section 8603.1.2, the provisions of CBC Section 907.2.10 shall apply to every dwelling unit, efficiency dwelling unit, guest room and suite in any building where the original building permit was issued prior to May 18, 1980. The smoke detectors may be battery operated until August 1, 1983, at which time the smoke detectors shall be located and permanently wired as required in CBC Section 907.2.10.

Nothing in this Section shall be construed to waive the requirement for permanently wired smoke detectors, which was in effect at the time the original building permit for the building was issued.

Every permanently wired smoke detector installed in a corridor or area giving access to the sleeping rooms shall be located within 12 feet 6 inches (3810 mm) of the sleeping room. Where the location of the detector is less than 12 feet 6 inches (3810 mm) of an appliance, which produces products of combustion other than a forced-air heating unit, a photoelectric type detector shall be required. There shall be no more than one door separating that type of detector from any room used for sleeping purposes. A permanently wired smoke detector installed pursuant to a permit issued prior to July 31, 1981, need not comply with this paragraph until replaced.

**8603.1.2 Existing apartment hotels and hotels over 75 feet in height.** Every existing apartment hotel more than 75 feet in height and containing no more than nine dwelling units and every existing hotel more than 75 feet (23 m) in height, where the original building permit for the building was issued prior to May 18, 1980, shall comply with the provisions of CBC Section 907.2.10 not later than August 1, 1981.

**Exception:** The operative date for compliance may be delayed until August 1, 1982, if the Department determines that the building complies with either the provisions of CBC Sections 420 and 602.2 or *California Existing Building Code* Section 601.1.1.

Notwithstanding any other provision here to the contrary, every guest room in any apartment hotel or hotel described in this section when used as a light-housekeep-

ing room, as that term is described in Section 8116.1, shall be provided with smoke detectors in compliance with the provisions of CBC Section 907.2.10 and the provisions of Section 8603.2 pertaining to photoelectric-type smoke detectors located in corridors or areas giving access to sleeping rooms. Smoke detectors may be battery operated until August 1, 1982, at which time the smoke detectors shall be located and permanently wired as required by CBC Section 907.2.10.

### 8603.2 Group R, Division 3 Occupancies.

**8603.2.1 Existing one-family dwellings.** After July 31, 1980, existing one-family dwellings shall be provided with smoke detectors, which may be battery operated, located as specified in CBC Section 907.2.10 for Group R, Division 3 occupancies, if:

1. The dwelling is sold or exchanged and the original building permit was issued prior to May 19, 1980; or
2. Alterations, repairs or additions requiring a permit are made or reroofing or shower pan replacement is performed by a Certified Licensed Contractor pursuant to Section 108.12 with a valuation in excess of \$1,000.00; or
3. One or more sleeping rooms are added or created; or
4. Bars, grilles, grates, roll-down security shutters, or similar devices are installed on all emergency escape windows and exterior doors of any sleeping rooms.

Nothing in this Section shall be construed to waive the requirement to permanently install wired smoke detectors, which were required at the time the original building permit for the building was issued.

For the purposes of this subsection, the term "permit" shall not include permits required for the repair or replacement of electrical, plumbing or mechanical equipment.

**8603.2.2 Existing two-family dwellings.** Every building containing two dwelling units and not more than five guest rooms, where the original building permit was issued prior to May 18, 1980, shall comply with the provisions of CBC Section 907.2.10 and the provisions of Section 8603.2.1 pertaining to photoelectric-type smoke detectors located in corridors or areas giving access to sleeping rooms. Smoke detectors may be battery operated until August 1, 1983, at which time the smoke detectors shall be located and permanently wired as required by CBC Section 907.2.10.

Nothing in this Section shall be construed to waive a requirement to install permanently wired smoke detectors, which were required at the time the original building permit for the building was issued.

## SECTION 8604 FIRE SAFETY STANDARDS

### 8604.1 General.

#### 8604.1.1 Notification.

**8604.1.1.1.** Whenever the Department determines by inspection that a building does not conform to the minimum requirements of either Sections 8604.2, 8604.3,

8604.4 or 8604.5, the Department shall prepare a written Fire Safety Standards Repair Order directing the owner to repair and modify the building so as to conform to those minimum requirements. The Department shall serve the order either personally or by certified or registered mail, upon the owner as shown on the last equalized assessment roll and may serve the order upon the person, if any, in real or apparent charge or control of the building.

The order shall specify the manner in which the building fails to meet the minimum requirements of Sections 8604.2, 8604.3, 8604.4 or 8604.5. The order shall direct the owner of the building to submit plans, obtain the necessary permits and complete the necessary corrections.

**8604.1.1.2.** Whenever, pursuant to LAMC Section 57.106.5, the Fire Department determines by inspection that a building does not conform to the minimum requirements of Section 8604.6, it shall prepare a written Fire/Life Safety Order directing the owner to repair and modify the building so as to conform to the minimum requirements of Section 8604.6.

The order shall specify the manner in which the building fails to meet the minimum requirements of Section 8604.6. The order shall direct the owner of the building to submit plans, obtain necessary permits and complete the necessary corrections.

The order shall be transmitted to the Department for service, recordation and enforcement purposes. The Department shall serve the order, either personally or by certified or registered mail, upon the owner as shown on the last equalized assessment roll and may serve the person, if any, in real or apparent charge or control of the building. The provisions of this subparagraph are not intended to prevent the Department from also making a determination or issuing an order regarding failure to comply with Section 8604.6.

#### **8604.1.2 Time for compliance.**

**8604.1.2.1.** Whenever the Department serves a Fire Safety Standards Repair Order pursuant to Section 8604.1.1.1, the owner of a building shall submit plans and obtain necessary permits as required in that order not later than 90 days after service of the order and shall complete necessary corrections not later than one year after service of the order for work under Sections 8604.2, 8604.3, 8604.4 or 8604.5. No extension of time, either to submit plans, obtain permits or complete the necessary corrections shall be granted except by the Board upon a finding of unusual circumstances which warrant an extension.

**8604.1.2.2.** Whenever the Department serves a Fire/Life Safety Order pursuant to Section 8604.1.1.2, the owner of a building shall:

1. Submit main system plans, which include Plans for any required water storage tank, fire pump(s), Fire Department connection(s) and all sprinkler riser valves for sprinkler connections of each floor;

2. Obtain necessary main system permits as required in that order not later than one year after service of the order; and
3. Complete necessary corrections required by the Fire/Life Safety Order not later than three years after service of the order for work required under Section 8604.6.

#### **Exceptions to the time for work required under Section 8604.6:**

1. **Vacant Building.** If a building is vacant and secured from unauthorized entry, then the owner of the building may apply to the Department for an extension of time to comply with the requirements of Section 8604.6. An extension of time may be granted for a two year period and may be renewed for two year time periods, unless to do so poses a threat of health or safety. This extension of time expires and the building is subject to enforcement procedures if it is no longer adequately secured from unauthorized entry.
2. **Buildings only occupied below the second floor.** If a building is only occupied below the second floor and all floors from the second floor and above are vacant and secured from unauthorized entry, then, the owner(s) of that building may apply to the Department for an extension of time to comply with the requirements of Section 8604.6, provided sprinklers are installed on the occupied floors(s) and a two hour fire-rated separation is provided between the vacant and occupied floors. Such an extension of time may be granted for a two year period and may be renewed for additional two year time periods, unless to do so poses a threat to health or safety. No vacant portion of the building may be reoccupied until the requirements of Section 8604.1.2.2 Exception 3 are satisfied. This extension of time expires and the building is subject to enforcement procedures if it is no longer adequately secured above the first floor from unauthorized entry.
3. **Buildings with occupancy above the first floor.** The owner of a building cited for a violation of Section 8604.6 may request an extension of time to comply with those requirements. Extensions of time may be granted for a period of one year from the date of application and may be renewed for two additional one year periods. The owner shall submit to the Department a plan of action to:
  - a. Install fire sprinklers including the base system, fire alarm, emergency power and stairwell ventilation from the ground floor up to the floor above the highest occupied floor; and
  - b. Bring elevator lobby vestibules on all required floors up to the highest occupied floor into compliance.

An additional three year extension of time to comply with the requirements of Section 8604.6 on the remaining unoccupied floors of the building may

be granted subject to the owner completing all requirements in the occupied portions of the building within the time guidelines of their plan of action, unless to do so poses a threat of health or safety.

4. **Asbestos.** If an owner of a building commits to a program of abatement of asbestos, then the Department may grant an extension of time to complete the work required under Section 8604.6 provided that all necessary permits are obtained and the required water storage tank, fire pumps, riser and all sprinkler riser valves for sprinkler connections on each floor are installed and operational prior to the grant of any extension.

Subsequent extension approvals beyond the initial approval shall also be conditioned on progress of work in conformance with the plan of work submitted with the approved extension of time.

Request for an extension of time under Exceptions 1-4 above shall be filed on an application form provided by the Department and signed by the owner of the building. Applications are subject to review and action by the Department with concurrence by the Fire Department. An extension of time may be granted only where a good faith effort to comply can be demonstrated by the applicant. Applications shall be processed according to the guidelines set forth in Section 98.0403.2.

**8604.1.2.3 Recordation.** At the time that the Department serves a Fire/Life Safety Order or Fire Safety Repair Order, the Department shall file with the Office of the County Recorder a certificate stating that the building does not meet the minimum fire safety requirements of Sections 8604.2, 8604.3, 8604.4, 8604.5 or 8604.6 and that the owner of the building has been so notified.

After all necessary corrective work has been performed, the Department shall file with the Office of the County Recorder a certificate terminating the status of the building as nonconforming to the minimum fire safety requirements of Sections 8604.2, 8604.3, 8604.4, 8604.5 or 8604.6.

**8604.1.2.4 Enforcement.** Notwithstanding any other provisions of this Code to the contrary, it shall be unlawful for any person, firm or corporation to maintain, use or occupy any building within the scope of this section which does not meet the minimum standards specified in Section 8604.6.

Any person who fails to comply with an order issued pursuant to this section, within each of the time periods set forth in Section 8604.1.2.2, or who causes or permits another person to fail to comply with such an order, is guilty of a misdemeanor which is punishable by a fine of not more than \$1,000.00 and/or six months imprisonment.

For purposes of this paragraph, the phrase "any person" includes an owner, or lessor, sublessor, manager or any person in control of a building subject to this section. The legal owner of a building is that person, firm, corporation, partnership or other entity whose

name or title appears in the records in the Office of the County Recorder, as well as all successors or assignees of these owners.

In addition to any other remedy available at law, if the owner or other person in charge and control of the building fails to comply with an aforementioned order within the time periods set forth in Section 8604.1, the Department may order that the building be vacated and that the building remain vacated until all required corrective work has been completed. Whenever compliance with an order issued pursuant to the provision of this section has not been accomplished within 90 days after the date the building has been ordered vacated, or such additional time as may have been granted by the Board, the Department may order demolition of the building, in accordance with the provisions of Chapter 89 of this Code.

#### **8604.2. Commercial buildings.**

**8604.2.1 Purpose.** The purpose of this subsection is to provide a reasonable degree of fire safety for persons occupying existing commercial and industrial buildings.

**8604.2.2 Scope.** The provisions of this subsection shall apply to all existing commercial and industrial buildings more than two stories in height that do not conform to the minimum shaft enclosure and exit requirements of this Code and that are not required to comply with the *California Existing Building Code* for existing buildings over 75 feet (22.86 m) in height. The provisions of this subsection shall not authorize the modification of existing buildings or portions thereof which provide a greater degree of protection against fire than the minimum requirements established by this subsection.

**Exception:** The requirements of this subsection shall not apply to buildings erected after January 1, 1943.

**8604.2.3 Shaft enclosures.** Every opening in a floor shall be enclosed as required by CBC Section 713 for shaft enclosures, provided, however, that existing enclosure walls constructed of wood lath and plaster or equivalent fire-resistive materials and which are in good condition may be accepted in lieu of enclosure wall construction.

Corridor exits, which are interrupted by stairwell enclosures required by this subsection, shall be provided with exit door fire assemblies, which will close automatically when activated by an approved smoke detector.

#### **Exceptions:**

1. The shaft protection required by this paragraph may be omitted if the building is sprinklered throughout.
2. Existing metal elevator doors need not be replaced if they are in good condition. These doors may have openings protected with wire glass.

**8604.2.4 Exits.** Two reasonably separated and accessible exits shall be provided from each floor.

**Exception:** Existing fire escapes which are in structurally sound operational condition may be used as one means of egress.

Exit signals with letters at least 6 inches (152.4 mm) high shall be installed in conspicuous locations at each exit from the floor and whenever otherwise required to clearly indicate the direction of egress from area served.

### 8604.3 Residential buildings.

**8604.3.1 Purpose.** The purpose of this section is to provide a reasonable degree of fire safety for persons living and sleeping in apartment houses, hotels, apartment hotels, and in buildings housing Group R-4 or I-1 occupancy. Group R-4 or I-1 occupancy includes homes with medical care for ambulatory patients or children six years of age or over, and honor farms or conservation camps housing inmates who are not restrained. Alterations are required to these existing buildings, which do not conform to the minimum exiting, shaft enclosure and corridor protection requirements of this Code.

**8604.3.2 Scope.** The provisions of this section shall apply to all existing buildings more than two stories in height, which contain Group R-1, R-2, R-4 or I-1 Occupancy. Group R-4 or I-1 occupancy include homes with medical care for ambulatory patients or children six years of age or over, and honor farms or conservation camps housing inmates who are not restrained. The provisions of this subsection shall not authorize the modification of existing buildings or portions of buildings, which provide a greater degree of protection against fire than the minimum requirements established by this subsection.

**8604.3.3 Corridor walls and openings.** The walls of every public corridor shall be protected by one-hour fire-resistive construction, provided, however, that existing walls constructed of wood lath and plaster and which are in good condition, will be acceptable in lieu thereof.

Transoms and openings other than doors from public corridors to guest rooms and dwelling units shall be closed and solidly covered with material which will provide the degree of fire resistiveness as shall be provided by adjacent corridor walls.

All door openings from public corridors to guest rooms and dwelling units shall provide the same degree of fire resistiveness as shall be provided by adjacent corridor walls.

**Exception:** Door openings from public corridors to guest rooms and dwelling units may have 20-minute protection, provided:

- A. All stairways, hallways, exitways and storage or closet areas adjacent thereto are sprinklered; and
- B. A sprinkler head is placed inside each unit adjacent to each door opening from the public corridor to the guest room or dwelling unit; and
- C. An approved self-closing device is installed on each door opening from the public corridor into the guest room or dwelling unit.

**8604.3.4 Shaft enclosures.** All stairwells shall be enclosed in approved shaft enclosures, provided, however, that existing enclosure walls constructed of wood lath and

plaster which are in good condition will be accepted in lieu of approved shaft wall construction.

**Exception:** In buildings erected prior to January 1, 1943, stair shaft enclosures may be omitted if the building is sprinklered throughout and the sprinkler system is interconnected to the alarm system required under Section 8604.5.

### 8604.3.5 Existing conditions.

**8604.3.5.1.** Existing means of exit, including fire escapes, are acceptable where they exist in the required number and are maintained in good condition.

**8604.3.5.2.** No standpipes will be required where none exist.

**8604.3.5.3.** No emergency hallway illumination will be required where none exist.

**8604.3.5.4.** Dead-end corridors not over 20 feet (6.096 m) in length may have access to a second exit through a stair shaft enclosure.

**8604.4 Fire safety for existing group R-4 or I-1 occupancy.** This section applies to every existing Group R-4 or I-1 Occupancy over two stories in height with homes providing medical care for ambulatory patients or children six years of age or over, or with honor farms or conservation camps housing un-restrained inmates. When these buildings do not conform to the minimum shaft and corridor protection requirements of this Code, they shall be made to conform to the minimum requirements as specified in Section 8604.3.

### 8604.5 Fire protection standards for existing group R-1 or R-2 occupancies erected prior to January 1, 1943.

**8604.5.1 Scope.** The provisions of this section are in addition to those in Section 8604.3 and apply to all existing buildings three or more stories in height, which contain Group R-1 or R-2 Occupancies and which were erected prior to January 1, 1943.

**8604.5.2 Closure of doors.** All required stair shaft, cut-off and area separation doors shall be equipped with approved self-closing devices and electrically operated hold-open devices designed to release the door by the activation of smoke detectors located on each side of the doorway and within 12 inches (304.8 mm) of the ceiling.

**8604.5.3 Sprinklers.** All interior stairways, hallways, exits and storage or closet areas adjacent thereto shall be provided with an approved automatic sprinkler system connected with an alarm system that emits an audible signal throughout the premises. In any room having a door opening into an interior hallway, stairway or exitway, a sprinkler head shall be located inside the room directly over the door. Sprinklers so installed shall be equipped with listed residential sprinkler heads and may utilize polybutylene plastic pipe for laterals only. Sprinkler materials and installation shall comply with the Plumbing Code and Supplemental Rules and Regulations.

**8604.5.4 Self-closing device.** Each apartment or guest room door opening into an interior stairway, hallway or exit shall be equipped with an approved self-closing device.

**8604.5.5 State fire code.** Where the Group R-1 or R-2 Occupancy regulated by this section has floors used for human occupancy more than 75 feet (22.86 m) above the lowest floor level having building access, the provisions of Part 2 of Title 24 of the *California Building Code* relating to those occupancy shall apply in lieu of any less restrictive provisions set forth in this section.

**8604.6 Fire safety standards for existing high-rise buildings.**

**8604.6.1 Purpose.** The purpose of this section is to provide a reasonable degree of fire safety for persons occupying existing high-rise buildings.

**8604.6.2 Scope.** The provisions of this section shall apply to every existing high-rise building for which a building permit was issued prior to July 1, 1974.

**Exception:** The provisions of this section shall not apply to Group R-1 or R-2 Occupancy, as defined in CBC Section 310.1. The provisions of this section shall not authorize the modification of existing buildings or portions of the buildings, which provide a greater degree of protection against fire than the minimum requirements established by this section.

**8604.6.3 Definition.** For the purposes of this section, a high-rise building is a building of any type of construction having floors (as measured from the top of the floor surface) that may be used for human occupancy located more than 75 feet (22.86 m) above the lowest floor level having building access.

**8604.6.4 Requirements.** Every building within the scope of this section shall be provided with an automatic fire sprinkler system complying with all applicable sections of the LAMC. The sprinkler system shall cover all areas of the building.

**Exceptions:**

1. Sprinklers need not be installed in locations expressly excepted in the *Los Angeles Plumbing Code* provided other approved fire protection equipment is installed.
2. The Department may review, on a case by case basis, buildings within the scope of this section and may approve alternative fire protection systems which meet the intent of the high-rise sprinkler requirements.
3. The Department may, with the concurrence of the Fire Department, grant exceptions from the requirements of Chapter 20 of the *Los Angeles Plumbing Code* as specified in Section 8604.6.5.

**8604.6.5 Conditional exceptions.** The following exceptions from the requirements set forth in LAMC Section 94.2001 are available upon application to the Department provided all the stated conditions are met for each category of building.

**8604.6.5.1. Existing Buildings 75 feet to 150 feet in height.**

**Exceptions:**

1. Existing risers may be used when maintained in a safe and operable condition.

2. New, on-site water storage need not be provided. (When existing on-site water storage is available, it may be integrated into the fire sprinkler system.)

**Conditions:**

1. A 3 inch (76.2 mm) test drain shall be provided in each stair shaft where pressure-regulator valves are used. Valves, equipment and devices shall conform to *Los Angeles Plumbing Code* requirements.
2. A single pump having a minimum capacity of 750 g.p.m. shall be provided. (Diesel pumps shall have a four-hour fuel supply.)
3. There shall be a flow of 750 g.p.m. at 65 psi at the roof, and the sprinkler system design shall meet code requirements.
4. Existing sprinkler systems, existing or new standpipe systems and existing or new sprinkler risers shall be interconnected at the base of the riser system with a minimum of one fire Department connection.
5. Emergency standby electrical power with a four-hour fuel supply shall be provided for fire pumps and the following new installations:  
Fire protective signaling systems;  
Emergency exit lighting; and  
Exit and directional signs.

**8604.6.5.2. Existing Buildings Over 150 feet to 275 feet in height.**

**Exception:** Existing risers may be used when maintained in a safe and operable condition.

**Conditions:**

1. A 3 inch (176.2 mm) test drain shall be provided in each stair shaft where pressure-regulator valves are used. Valves, equipment and devices shall conform to *Los Angeles Plumbing Code* requirements.
2. At least two pumps connected to the automatic sprinkler system having a minimum capacity of 750 g.p.m. each shall be provided. (Diesel pumps shall have a four hour fuel supply.)
3. There shall be a flow of 750 g.p.m. at 65 psi at the roof, and the sprinkler system design shall meet code requirements.
4. Existing sprinkler systems, new and existing standpipe systems and new and existing sprinkler risers shall be interconnected at the base of the riser system with at least one fire Department connection.
5. Emergency standby electrical power with a four hour fuel supply shall be provided for fire pumps and the following new installations:  
Fire-protective signaling systems;  
Emergency exit lighting; and  
Exit and directional signs.

6. A minimum usable capacity of 20,000 gallon storage tank shall be provided on site.

**8604.6.5.3.** Existing buildings greater than 275 feet in height.

**Exception:** Existing risers may be used when maintained in a safe and operable condition.

**Conditions:**

1. A 3 inch (176.2 mm) test drain shall be provided in each stair shaft where pressure-reduction valves are used. Valves, equipment and devices shall conform to *Los Angeles Plumbing Code* requirements.
2. At least three pumps connected to the automatic sprinkler system having a minimum capacity of 750 g.p.m. each shall be provided.

At least one pump shall be an electric motor-driven pump. (Diesel pumps shall have a four hour fuel supply.)

3. There shall be a flow of 1,000 g.p.m. at 65 psi at the roof, and the sprinkler system design shall meet code requirements.
4. Existing sprinkler systems, new and existing standpipe systems, and new and existing sprinkler risers shall be interconnected at the base of the riser system with at least one Fire Department connection.
5. Emergency standby electrical power with a four hour fuel supply shall be provided for fire pumps and the following new installations:

Fire-protective signaling systems;  
Emergency exit lighting; and  
Exit and directional signs.

6. A minimum usable capacity of 40,000 gallon water storage tank shall be provided on site.

**8604.6.6 Elevator lobbies.** Existing high-rise buildings within the scope of this section shall comply with the following:

1. Except for the main entrance level, every elevator on each floor shall open into an elevator lobby which is separated from the remainder of the building, including corridors and other exits, by walls having a fire-resistive rating of not less than one hour. All lobby openings other than those for elevator doors, stairway enclosures and ducts shall be protected with three-fourths-hour self-closing fire assemblies actuated by combustion products-type smoke detectors.
2. Except for the main entrance level, each elevator lobby shall be provided with an approved smoke detector located on the lobby ceiling. When the detector is activated, elevator doors shall not open and all cars serving that lobby shall return to the main floor and be under manual control only. The smoke detector shall meet the requirements of Title 8, *California Administrative Code* (Elevator Safety Orders). The detector may serve to close the lobby doors.

**8604.6.7 Stair shaft ventilation.** Each stair shaft which extends to the roof shall be provided with a minimum ventilation opening of 20 square feet (1.85 m<sup>2</sup>) at the roof level.

## SECTION 8605

### EMERGENCY HOMELESS SHELTERS

**8605.1 Applicability of standards.** The provisions and standards set forth in Section 8605.2 shall be applicable to any emergency shelter for the homeless which complies with and is approved pursuant to LAMC Section 12.80 or 12.81.

**8605.2 General.** Notwithstanding any provisions of this Code to the contrary, the following requirements shall apply to emergency homeless shelters operated during a shelter crisis, as provided for in *Government Code Section 8698, et seq.* Other than the requirements set forth below, the facilities need not comply with the requirements of this Code for Group R occupancies unless otherwise specified in this Code:

1. The maximum occupant load allowed in these facilities shall be the number determined appropriate by the professional service provider operating the facility and/or the Housing and Community Investment Department of the City of Los Angeles, but in no event resulting in less than 50 square feet (4.64 m<sup>2</sup>) of usable area per occupant.
2. Fire Safety Requirements.
  - A. All exits shall comply with Chapter 10 of the *Los Angeles Fire Code*.
  - B. Smoke detection devices shall be provided in all sleeping areas and shall be installed in accordance with Article 7, Chapter V of the LAMC and CBC Section 907.2.10.
  - C. A fire alarm system capable of arousing occupants shall be installed in accordance with Article 7, Chapter V of the LAMC and CBC Section 907.2.8.
  - D. The use of any open flames and the possession or storage of any combustibles shall not be permitted.

**Exception:** The Superintendent of Building may approve the use of open flames and storage of combustibles in these buildings with concurrence of the Fire Department.

- E. Sleeping quarters shall be limited to the ground floor only.
3. Security.
  - A. An adequate number of security personnel shall remain on the premises during actual occupancy for the protection of the occupants and property.
  - B. Adequate lighting for security purposes shall be provided at all times.
4. Light, Heating, Ventilation and Sanitation.
  - A. Exterior openings for natural light and ventilation shall be provided as required for a Group R occupancy, CBC Sections 1203 and 1205; exterior openings or artificial lighting shall be provided per CBC Section 1205.3; and exterior openings or mechanical

ventilation shall be provided per the *California Mechanical Code*.

- B. All sleeping areas shall be provided with heating facilities capable of maintaining a room temperature of 70°F at a point eight feet above the floor.
  - C. Every building shall be provided with at least one water closet or at least two separate toilet facilities where both sexes are accommodated. Additional water closets shall be provided for each sex at the rate of one for every 20 beds in excess of 20.
5. Additional Requirements.
- A. Operating procedures shall be developed by the professional service provider and approved by the Housing and Community Investment Department of the City of Los Angeles. These procedures shall be designed to maintain order and safety within the Emergency Homeless Shelter.
  - B. Emergency Homeless Shelters shall be open for occupancy between the hours of 6:00 p.m. and 6:00 a.m. of the following day.

**8605.3 Zoning.** Every facility used to shelter homeless persons pursuant to this section shall comply with LAMC Section 12.80 or 12.81.

## SECTION 8606 EMERGENCY LIGHTING STANDARDS FOR EXISTING RESIDENTIAL BUILDINGS, GROUP R, DIVISION 1 OCCUPANCIES

**8606.1 Scope.** The provisions of this section apply to all existing buildings, which contain five or more dwelling units with an enclosed exit corridor or pathway that is 50 feet (1524 mm) in length or greater on any single floor, or which has an enclosed stairway.

### Exceptions:

- A. The provisions of this section shall not apply to Group R-1 and R-2 Occupancies, which currently have lighted emergency exit signs and emergency lights in the corridors and stairwells where both signs and lights are connected to a generator, central battery system or individual battery powered unit.
- B. The provisions of this section shall not apply to corridors located inside individual dwelling units.
- C. The provisions of this section shall not apply to Group R-1 and R-2 Occupancies, which do not contain enclosed exit corridors, enclosed stairways, lobbies, passageways, or other common interior pathways that are part of the exiting system.

### 8606.2 Definition.

- 1. The owner is that legal owner of an apartment building, congregate residence, hotel, and in those instances where a building is a condominium, the association of owners or the association of owners and the owner of each unit.
- 2. The legal owner of a building is that person, firm, corporation, partnership, or other entity whose name or

title appears in the last equalized assessment roll in the Office of the County Recorder, as well as all successors or assignees of these owners.

### 8606.3 Requirements.

**8606.3.1.** All buildings required to comply with this section shall be provided with:

- 1. permanently connected, emergency, battery operated, enclosed exit corridor, enclosed stairway, and exit sign illumination installed in the required exit pathway; or,
- 2. The required emergency enclosed exit corridor, enclosed stairway, and exit sign illumination powered from a central battery system or an emergency generator complying with Article 700 of the NEC.

**8606.3.2 Plan check.** Plans for the emergency exit corridor and exit sign lighting systems shall be submitted to the Department for review and approval prior to obtaining a permit. Plans shall provide the information specified in LAMC Section 93.0207. (Electrical Code).

**Exception:** Existing buildings having less than four stories and containing fewer than 50 dwelling units are exempt from the requirement to submit electrical plans.

**8606.3.3.** Means of egress illumination shall be provided for the enclosed exit corridor, enclosed stairway, and pathway as required in CBC Section 1006.

**8606.3.4.** Lighted exit signs shall meet the requirements of CBC Section 1013.1 and where emergency power is required for Group R-1 and R-2 Occupancies as specified in CBC Section 1013.6.2.

**8606.3.5.** Emergency battery powered units shall be capable of operating for a minimum one and one-half hours.

**8606.3.6.** The provisions of this section shall not authorize modifying emergency lighting systems in existing buildings or portions thereof which provide a greater degree of protection than the minimum requirements established by this section.

**8606.3.7.** When the residential portion of a mixed occupancy building falls within the scope of this section, the non-residential portions of that building must also comply with the provisions of this section.

### 8606.4 Enforcement.

**8606.4.1 Notification.** Whenever the Department or the Fire Department determines by inspection or review of City records that a Group R-1 or R-2 Occupancy multifamily residential building containing five or more dwelling units does not conform to the minimum requirements of this section, either Department shall prepare a written order directing the owner to repair and modify the building so as to conform to the minimum requirements of this section.

The order shall specify the manner in which the building fails to meet the minimum requirements of this section. The order shall direct the owner of the building to submit plans, if required, to the Department, obtain necessary permits and complete the work specified in the order.



Service of the order shall be accomplished in the following manner:

1. The Department and/or the Fire Department may personally serve the order upon the owner; or,
2. The Department and/or the Fire Department may serve the order by certified or registered mail upon the owner.

In addition, the person in real or apparent charge or control of the building or unit of the building may be served in the manner prescribed by this subsection.

**8606.4.2 Time for compliance.** Whenever an order is served pursuant to Section 8606.4.1 above, the owner shall:

1. Submit all building plans required by the order to the Department within two years of the effective date of the order; and,
2. Obtain permits required by the order from the Department as a result of the order within three years of the effective date of the order; and,
3. Complete the work required by the order within five years of the effective date of the order.

**8606.4.3 Penalties.** Any person who fails to comply with an order issued pursuant to this section, within each of the time periods set forth in Section 8606.4.2 above, or who causes or permits another person to fail to comply with such an order, is guilty of a misdemeanor which is punishable by a fine of not more than \$1,000.00 and/or six months imprisonment in the County Jail. For purposes of penalties, the phrase “any person” includes an owner, lessor, sublessor, manager, or any person in charge or control of a building subject to this section.

In addition to any other remedy available by law, if the owner or other person in charge or control of the subject building fails to comply with an order issued pursuant to this section within the time periods set forth in Section 8606.4.2, the Department or the Fire Department may refer the violation to the State Franchise Tax Board as a substandard residential building and/or refer the building to the Rent Escrow Account Program (REAP).

## SECTION 8607 TENANT SAFETY FOR APARTMENT HOUSES, EXCEPT FOR RESIDENTIAL CONDOMINIUMS

The purpose of this section is to provide minimum security standards for tenants in existing apartment houses, except for residential condominiums as defined in this Code. Owners of all lots developed with an apartment house shall provide lights and locks or metal bars or grilles that comply with the provisions of LAMC Subsections 12.21 A.5.(k), 6304.2, 6305 and Chapter 67, in any of the following circumstances:

1. At the time the apartment building is sold or exchanged; or
2. At the time a permit is issued for alterations, repairs or additions which exceed a valuation of \$10,000; or

3. Upon the determination of the Board pursuant to Section 8108.3.

No costs incurred as a result of this section may be charged to the tenant or tenants of any properties subject to the Rent Escrow Account Program provisions commencing at LAMC Section 162.00.



## CHAPTER 88

# EARTHQUAKE HAZARD REDUCTION IN EXISTING BUILDINGS

### SECTION 8801 PURPOSE

The purpose of this Chapter is to promote public safety and welfare by reducing the risk of death or injury that may result from the effects of earthquakes on unreinforced masonry bearing wall buildings constructed before 1934. Such buildings have been widely recognized for their sustaining of life hazardous damage as a result of partial or complete collapse during past moderate to strong earthquakes.

The provisions of this Chapter are minimum standards for structural seismic resistance established primarily to reduce the risk of loss of life or injury and will not necessarily prevent loss of life or injury or prevent earthquake damage to an existing building which complies with these standards. This chapter shall not require existing electrical, plumbing, mechanical or fire-safety systems to be altered unless they constitute a hazard to life or property.

This Chapter provides systematic procedures and standards for identification and classification of unreinforced masonry bearing wall buildings based on their current use. Priorities, time periods and standards are also established under which these buildings are required to be structurally analyzed and anchored. Where the analysis determines deficiencies, this chapter requires the building to be strengthened or demolished.

### SECTION 8802 SCOPE

The provisions of this Chapter shall apply to all buildings constructed or under construction prior to October 6, 1933, or for which a building permit was issued prior to October 6, 1933, which on the effective date of this ordinance have unreinforced masonry bearing walls as defined herein.

**Exception:** This Chapter shall not apply to detached one- or two-family dwellings and detached apartment houses containing less than 5 dwelling units and used solely for residential purposes.

### SECTION 8803 DEFINITIONS

For purposes of this Chapter, the applicable definitions in CBC Sections 1602 and 1613 and the following shall apply:

**ESSENTIAL BUILDING** is any building housing a hospital or other medical facility having surgery or emergency treatment areas, fire or police stations, municipal government disaster operation and communication centers.

**HIGH-RISK BUILDING** is any building not classified as an essential building having an occupant load, as determined by CBC Section 1004.1, of 100 occupants or more.

**Exception:** A high-risk building shall not include the following:

1. Any building having exterior walls braced with masonry cross walls or wood-frame cross walls spaced less than 40 feet (12 192 mm) apart in each story. Cross walls shall be full-story height with a minimum length of  $1\frac{1}{2}$  times the story height.
2. Any building used for its intended purpose, as determined by the Department, for less than 20 hours per week.

**HISTORICAL BUILDING** is any building designated as an historical building by an appropriate federal, state or City jurisdiction.

**LOW-RISK BUILDING** is any building not classified as an essential building having an occupant load as determined by CBC Section 1004.1 of less than 20 occupants.

**MEDIUM-RISK BUILDING** is any building not classified as a high-risk building or an essential building having an occupant load as determined by CBC Section 1004.1 of 20 occupants or more.

**UNREINFORCED MASONRY BEARING WALL** is a masonry wall having all the following characteristics:

1. Provides the vertical support for a floor or roof.
2. The total superimposed load is over 100 pounds per linear foot (1.5 kN/m).
3. The area of reinforcing steel is less than 50 percent of that required by CBC Section 2106.1.

### SECTION 8804 RATING CLASSIFICATIONS

The rating classifications as exhibited in Table No. 88-A are hereby established and each building within the scope of this chapter shall be placed in one rating classification by the Department. The total occupant load of the entire building as determined by CBC Section 1004.1 shall be used to determine the rating classification.

**Exceptions:**

1. For the purpose of this Chapter, portions of buildings constructed to act independently when resisting seismic forces may be placed in separate rating classifications.
2. For the purpose of this Chapter, to establish the rating classification of a building containing one or

more artist in residence spaces, as defined in Section 8501 of this Code, the occupant load of each artist in residence space shall be one for each space less than 2,000 square feet (186 m<sup>2</sup>) in area and two for each space 2,000 square feet (186 m<sup>2</sup>) or more in area.

## SECTION 8805 GENERAL REQUIREMENTS

The owner of each building within the scope of this Chapter shall cause a structural analysis to be made of the building by a civil or structural engineer or architect licensed by the state of California, and if the building does not meet the minimum earthquake standards specified in this chapter, the owner shall cause it to be structurally altered to conform to such standards or cause the building to be demolished.

The owner of a building within the scope of this Chapter shall comply with the requirements set forth above by submitting to the Department for review within the stated time limits:

1. Within 270 days after the service of the order, a structural analysis. Such analysis, which is subject to approval by the Department, shall demonstrate that the building meets the minimum requirements of this Chapter, or
2. Within 270 days after the service of the order, the structural analysis and plans for the proposed structural alterations of the building necessary to comply with the minimum requirements of this chapter, or
3. Within 120 days after service of the order, plans for the installation of wall anchors in accordance with the requirements specified in Section 8808.3, or
4. Within 270 days after the service of the order, plans for the demolition of the building.

After plans are submitted and approved by the Department, the owner shall obtain a building permit, and commence and complete the required construction or demolition within the time limits set forth in Table No. 88-B. These time limits shall begin to run from the date the order is served in accordance with Sections 8806.1 and 8806.2.

Owners electing to comply with Item 3 are also required to comply with Items 2 and 4, provided, however, that the 270 day period provided for in Items 2 and 4 and the time limits for obtaining a building permit, commencing construction and completing construction for complete structural alterations or building demolition set forth in Table No. 88-B shall be extended in accordance with Table No. 88-C. Each such extended time limit, except the time limit for commencing construction, shall begin to run from the date the order is served in accordance with Section 8806.2. The time limit for commencing construction shall commence to run from the date the building permit is issued.

## SECTION 8806 ADMINISTRATION

**8806.1 Service of order.** When the Department determines that a building is within the scope of this Chapter, the owner

shall comply with Section 8805. If the owner does not comply, the Department shall issue an order, as provided in Section 8806.2, to the owner of each building with the minimum time periods for service of such orders set forth in Table No. 88-C. The minimum time period for the service of such orders shall be measured from the effective date of this Chapter. The Department shall, upon receipt of a written request from the owner, order a building to comply with this Chapter prior to the normal service date for such building as set forth in this section.

**8806.2 Contents of order.** The order shall be in writing and shall be served either personally or by certified or registered mail upon the owner as shown on the last equalized assessment, and upon the person, if any, in apparent charge or control of the building. The order shall specify that the building has been determined by the Department to be within the scope of this Chapter and, therefore, is required to meet the minimum seismic standards of this Chapter. The order shall specify the rating classification of the building and shall be accompanied by a copy of Section 8805, which sets forth the owner's alternatives and time limits for compliance.

**8806.3 Appeal from order.** The owner or person in charge or control of the building may appeal the Department's initial determination that the building is within the scope of this Chapter to the Board of Building and Safety Commissioners. Such appeal shall be filed with the Board within 60 days from the service date of the order described in Section 8806.2. Any such appeal shall be decided by the Board no later than 60 days after the date that the appeal is filed. Such appeal shall be made in writing upon appropriate forms provided therefor by the Department, and the grounds thereof shall be stated clearly and concisely. Each appeal shall be accompanied by a filing fee as set forth in Table No. 4-A of Division 4 of Article 8 of Chapter IX of the *Los Angeles Municipal Code*.

Appeals or requests for slight modifications from any other determinations, orders or actions by the Department pursuant to this Chapter shall be made in accordance with the procedures established in Section 98.0403.2 of the *Los Angeles Municipal Code*.

**8806.4 Recordation.** At the time that the Department serves the aforementioned order, the Department shall file with the Office of the County Recorder a certificate stating that the subject building is within the scope of this Chapter. The certificate shall also state that the owner thereof has been ordered to structurally analyze the building and to structurally alter or demolish it when the Department determines the building is not in compliance with this Chapter.

If the building is either demolished, found not to be within the scope of this Chapter, or is structurally capable of resisting minimum seismic forces required by this Chapter as a result of structural alterations or an analysis, the Department shall file with the Office of the County Recorder a certificate terminating the status of the subject building as being classified within the scope of this Chapter.

**8806.5 Enforcement.** If the owner or other person in charge or control of the subject building fails to comply with any order issued by the Department pursuant to this Chapter within any of the time limits set forth in Section 8805, the

Department may order that the entire building or a portion thereof be vacated and that the building or a portion thereof remain vacated until such order has been complied with. If compliance with such order has not been accomplished within 90 days after the date the building has been ordered vacated or such additional time as may have been granted by the Board, the Superintendent may order its demolition in accordance with the provisions of Section 8903 of this Code.

## SECTION 8807 HISTORICAL BUILDINGS

Qualified historical buildings shall comply with the requirements of the *California Historical Building Code* established under Part 8, Title 24 of the *California Code of Regulations*.

## SECTION 8808 ANALYSIS AND DESIGN

**8808.1 General.** Every structure within the scope of this Chapter shall be analyzed and constructed to resist minimum total lateral seismic forces assumed to act non concurrently in the direction of each of the main axes of the structure in accordance with the following formula:

$$V = IKCSW \quad \text{(Formula 8-1)}$$

The value of  $IKCS$  need not exceed the values set forth in Table No. 88-D based on the applicable rating classification of the building.

**8808.2 Lateral forces on elements of structures.** Parts or portions of structures shall be analyzed and designed for lateral loads in accordance with Sections 8808.1 of this Code and ASCE 7, but not less than the value from the following formula:

$$F_p = IC_pSW_p \quad \text{(Formula 8-2)}$$

For the provisions of this Section, the product of  $IS$  need not exceed the values as set forth in Table No. 88-E.

**Exception:** Unreinforced masonry walls in buildings not having a Rating Classification I may be analyzed in accordance with Section 8809.

The value of  $C_p$  need not exceed the values set forth in Table No. 88-F.

**8808.3 Anchorage and interconnection.** Anchorage and interconnection of all parts, portions and elements of the structure shall be analyzed and designed for lateral forces in accordance with Table No. 88-F of this Code and Formula (8-2) as modified by Table No. 88-E. Minimum anchorage of masonry walls to each floor or roof shall resist a minimum force of 200 pounds per linear foot (2.92 kN/m) acting normal to the wall at the level of the floor or roof.

**8808.4 Level of required repair.** Alterations and repairs required to meet the provisions of this Chapter shall comply with all other applicable requirements of this Code unless specifically provided for in this Chapter.

### 8808.5 Required analysis.

**8808.5.1 General.** Except as modified herein, the analysis and design relating to the structural alteration of existing structures within the scope of this Chapter shall be in

accordance with the analysis specified in Chapter 16 of this Code.

In addition, the compatibility of the roof diaphragm stiffness with the out-of-plane stability of the unreinforced masonry bearing walls of the story immediately below the roof system shall be verified in accordance with the provisions of Section 8811.

**Exception:** Buildings with rigid concrete or steel and concrete roof diaphragms shall use the  $h/t$  values for “all other buildings” in Table No. 88-G.

**8808.5.2 Continuous stress path.** A complete, continuous stress path from every part or portion of the structure to the ground shall be provided for the required horizontal forces.

**8808.5.3 Positive connections.** All parts, portions or elements of the structure shall be interconnected by positive means.

### 8808.6 Analysis procedure.

**8808.6.1 General.** Stresses in materials and existing construction utilized to transfer seismic forces from the ground to parts or portions of the structure shall conform to those permitted by the Code and those materials and types of construction specified in Section 8809.

**8808.6.2 Connections.** Materials and connectors used for interconnection of parts and portions of the structure shall conform to the Code. Nails may be used as part of an approved connector.

**8808.6.3 Unreinforced masonry walls.** Except as modified here, unreinforced masonry walls shall be analyzed as specified in the applicable parts of CBC Sections 2106 and 2107 to withstand all vertical loads as specified in Chapter 16 of this Code in addition to the seismic forces required by this Chapter.

Substantial changes in wall thickness or stiffness shall be considered in the analysis for out-of-plane and in-plane wall stability, and the wall shall be restrained against out-of-plane instability by anchorage and bracing to the roof or floor diaphragm in accordance with Section 8808.3 of this Code.

**Exception:** Variations in wall stiffness caused by nominal openings such as windows and exit doors need not be considered.

No allowable tension stress will be permitted in unreinforced masonry walls. Walls not capable of resisting the required design forces specified in this chapter shall be strengthened or shall be removed and replaced.

### Exceptions:

1. Unreinforced masonry walls in buildings not classified as a Rating Classification I pursuant to Table No. 88-A may be analyzed in accordance with Section 8809 of this Code.
2. Unreinforced masonry walls which carry no design loads other than their own weight may be considered as veneer if they are adequately anchored to new supporting elements.

**8808.7 Combination of vertical and seismic forces.**

**8808.7.1 New materials.** All new materials introduced into the structure to meet the requirements of this section, which are subjected to combined vertical and horizontal forces, shall comply with CBC Section 1605.

**8808.7.2 Existing materials.** When stresses in existing lateral force-resisting elements are due to a combination of dead and live loads plus seismic loads, the allowable working stress specified in the Code may be increased 100 percent. However, no increase will be permitted in the stresses allowed in Section 8809, and the stresses in members due only to seismic and dead loads shall not exceed the values permitted by CBC Section 1605.

**8808.7.3 Allowable reduction of bending stress by vertical load.** In calculating tensile fiber stress due to seismic forces required by this chapter, the maximum tensile fiber stress may be reduced by the full direct stress due to vertical dead loads.

**8808.8 Irregular features.** All structures having any of the irregular features described in Table 12.3-1 or Table 12.3-2 of ASCE-7 shall be designated to meet the additional requirements of those sections referenced in the tables.

## SECTION 8809 MATERIALS OF CONSTRUCTION

**8809.1 General.** All materials permitted by this Code, including their appropriate allowable stresses and those existing configurations of materials specified herein, may be utilized to meet the requirements of this Chapter.

**8809.2 Existing materials.**

**8809.2.1 General.** Unreinforced masonry walls analyzed in accordance with this section may provide vertical support for roof and floor construction and resistance to lateral loads.

All units of both bearing and nonbearing walls shall be laid with full shoved mortar joints; all head, bed and wall (collar) joints shall be solidly filled with mortar; and the bonding of adjacent wythes of multiwythe walls shall be as follows:

The facing and backing shall be bonded so that not less than 4 percent of the wall surface of each face is composed of headers extending not less than four inches (102 mm) into the backing. The distance between adjacent full-length headers shall not exceed 24 inches (610 mm) either vertically or horizontally. In walls in which a single header does not extend through the wall, headers from the opposite sides shall overlap at least four inches (102 mm), or headers from opposite sides shall be covered with another header course overlapping the header below at least four inches (102 mm).

Wythes of walls not bonded as described above shall be considered as veneer. The veneer wythe shall not be included in the effective thickness used in calculating the height-to-thickness ratio and the shear capacity of the wall.

Tension stresses due to seismic forces normal to the wall may be neglected if the wall does not exceed the height-to-thickness ratio in Table No. 88-G and the in-plane shear stresses due to seismic loads as set forth in Table No. 88-J.

If the wall height-to-thickness ratio exceeds the specified limits, the wall may be supported by vertical bracing members designed in accordance with Chapter 16 of this Code. The deflection of such bracing member at design loads shall not exceed one tenth of the wall thickness.

**Exception:** The wall may be supported by flexible vertical bracing members designed in accordance with Section 8808.2 if the deflection at design loads is not less than one quarter or more than one third of the wall thickness.

All vertical bracing members shall be attached to floor and roof construction for their design loads independently of required wall anchors. Horizontal spacing of vertical bracing members shall not exceed one half the unsupported height of the wall or 10 feet (3048 mm).

The wall height may be measured vertically to bracing elements other than a floor or roof. Spacing of the bracing elements and wall anchors shall not exceed six feet (1829 mm). Bracing elements shall be detailed to minimize the horizontal displacement of the wall by components of vertical displacements of the floor or roof.

**8809.2.2 Veneer.** Veneer shall be anchored with approved anchor ties conforming to the required design capacity specified in Section 1405 of this Code and placed at a maximum spacing of 24 inches (610 mm).

**Exception:** Existing veneer anchor ties may be acceptable provided the ties are in good condition and conform to the minimum size, maximum spacing and material requirements specified in the provisions of the Los Angeles Building Ordinances in effect prior to October 6, 1933. Said provisions specified that veneer anchor ties shall be corrugated galvanized iron strips not less than one inch (25 mm) in width, eight inches (203 mm) in length and  $\frac{1}{16}$  inch (1.6 mm) in thickness and shall be located and laid in every alternate course in the vertical height of the wall at a spacing not to exceed 17 inches (432 mm) on center horizontally. As an alternate, said provisions specified that such ties may be laid in every fourth course vertically at a spacing not to exceed nine inches (229 mm) on center horizontally.

The existence and condition of existing veneer anchor ties shall be verified as follows:

1. An approved testing laboratory shall verify the location and spacing of the ties and shall submit a report to the Department for approval as a part of the structural analysis.
2. The veneer in a selected area shall be removed to expose a representative sample of ties (not less than four) for inspection by the Department.

**8809.2.3 Existing roof, floors, walls, footings and wood framing.** Existing materials, including wood shear walls utilized in the described configuration, may be used as part of the lateral load-resisting system, provided that the stresses in these materials do not exceed the values shown in Table No. 88-H.

**8809.3 Strengthening of existing materials.** New materials, including wood shear walls, may be utilized to strengthen portions of the existing seismic resisting system in the described configurations, provided that the stresses do not exceed the values shown in Table No. 88-I.

**8809.4 Alternate materials.** Alternate materials, designs and methods of construction may be approved by the Department in accordance with the provisions of Article 8, Chapter IX of the *Los Angeles Municipal Code*.

**8809.5 Minimum acceptable quality of existing unreinforced masonry walls.**

**8809.5.1 General provisions.** All unreinforced masonry walls utilized to carry vertical loads and seismic forces parallel and perpendicular to the wall plane shall be tested as specified in this section. All masonry quality shall equal or exceed the minimum standards established herein or shall be removed and replaced by new materials. Alternate methods of testing may be approved by the Department. The quality of mortar in all masonry walls shall be determined by performing in-place shear tests or by testing eight-inch (203 mm) diameter cores.

The vertical wall joint between wythes (collar joints) shall be inspected at the test location after the in-place shear tests, and an estimate of the percentage of wythe-to-wythe mortar coverage shall be reported along with the results of the in-place shear tests. Where the exterior face is veneer, the type of veneer, its thickness and its bonding and/or ties to the structural wall masonry shall also be reported.

Alternative methods of testing may be approved by the Department. Nothing shall prevent pointing with mortar of all the masonry wall joints before the tests are first made. Prior to any pointing, the mortar joints must be raked and cleaned to remove loose and deteriorated mortar. Mortar for pointing shall be Type S or N except masonry cements shall not be used. All preparation and mortar pointing shall be done under the continuous inspection of a registered deputy inspector. At the conclusion of the inspection, the inspector shall submit a written report to the licensed engineer or architect responsible for the seismic analysis of the building setting forth the result of the work inspected. Such report shall be submitted to the Department for approval as part of the structural analysis.

All testing shall meet Department-approved testing method parameters (including rate of load application) and shall be performed in accordance with the requirements specified in this section by a testing agency approved by the Department.

An accurate record of all such tests and their location in the building shall be recorded and these results shall be submitted to the Department for approval as part of the structural analysis.

**8809.5.2 Number and location of tests.** The minimum number of tests shall be as follows:

1. At each of both the first and top stories, not less than two per wall line or line of wall elements providing a common line of resistance to lateral forces.
2. At each of all other stories, not less than one per wall element providing a common line of resistance to lateral forces.
3. In any case, not less than one per 1,500 square feet (139.4 m<sup>2</sup>) of wall surface and a total of eight.

The shear tests shall be taken at locations representative of the mortar conditions throughout the entire building, taking into account variations in workmanship at different building height levels, variations in weathering of the exterior surfaces and variations in the condition of the interior surfaces due to deterioration caused by leaks and condensation of water and/or by the deleterious effects of other substances contained within the building. Where the higher h/t ratios allowed in Footnotes Nos. 4 and 5 of Table No. 88-G are to be used, the in-place shear tests taken at the top story shall be included in the 80 percent of the shear tests used to determine the minimum mortar shear strength.

The exact test or core location shall be determined at the building site by the licensed engineer or architect responsible for the seismic analysis of the subject building.

**8809.5.3 In-place shear tests.** The bed joints of the outer wythe of the masonry shall be tested in shear by laterally displacing a single brick relative to the adjacent bricks in that wythe. The mortar in the opposite head joint of the brick to be tested shall be removed and cleaned prior to testing. The minimum quality mortar in 80 percent of the shear tests shall not be less than the total of 30 psi (206.9 kPa) plus the axial stress in the wall at the point of the test. The shear stress shall be based on the gross area of both bed joints and shall be that shear stress at which movement of the masonry is first measured or at which cracking first appears.

An internal caliper, graduated in 0.001 of an inch (0.025 mm) increments shall be used to measure movement of the masonry unit. A hydraulic jack equipped with a pressure gauge graduated in increments of 50 psi (345 kPa) or less shall be used. The jack load shall be applied at a rate not exceeding 5,000 pounds (22 240 N) per minute.

The test shall be conducted by a minimum of two technicians. Load and displacement readings shall be recorded at the following intervals:

1. At a caliper reading of 0.001 inch (0.025 mm);
2. At first visually observed sign of movement or cracking of the mortar or masonry unit;
3. At a caliper reading of 0.02 inch (0.51 mm); and
4. The ultimate load on the unit.

The masonry unit to be tested shall not be located adjacent to a bond course in a brick wall laid in common bond. Tests to evaluate the mortar quality of structural walls shall not be conducted in masonry veneer.

Walls with mortar values that are consistently low and do not meet the minimum quality values specified in this Section shall be entirely pointed per Chapter A1, Section A103 and A106.2.3.9 of the 2019 *California Existing Building Code*, except that the depth of joint penetration shall be  $1\frac{1}{2}$  inch (38 mm) in lieu of the  $\frac{3}{4}$  inch (19 mm) specified.

**8809.5.4 Core tests.** A minimum number of mortar test specimens equal to the number of required cores shall be prepared from the cores and tested as specified herein. The mortar joint of the outer wythe of the masonry core shall be tested in shear by placing the circular core section in a compression testing machine with the mortar bed joint rotated 15 degrees from the axis of the applied load. The mortar joint tested in shear shall have an average ultimate stress of 20 psi (138 kPa) based on the gross area. The average shall be obtained from the total number of cores made. If test specimens cannot be made from cores taken, the shear value shall be reported as zero.

**8809.6 Testing of shear bolts.** One fourth of all new shear bolts and dowels embedded in unreinforced masonry walls shall be tested by a registered deputy building inspector using a torque calibrated wrench to the following minimum torques:

$\frac{1}{2}$ -inch-diameter bolts or dowels	40 foot-pounds
$\frac{5}{8}$ -inch-diameter bolts or dowels	50 foot-pounds
$\frac{3}{4}$ -inch-diameter bolts or dowels	60 foot-pounds

For SI: 1 inch = 25.4 mm, 1 foot-pound = 1.356 Nm.

No bolts exceeding  $\frac{3}{4}$ -inch (19.1 mm) shall be used. All nuts shall be installed over malleable iron or plate washers when bearing on wood and heavy cut washers when bearing on steel.

**8809.7 Determination of allowable stresses for design methods based on test results.**

**8809.7.1 Design shear values.** Design seismic in-plane shear stresses shall be substantiated by tests performed as specified in Section 8809.5.3 and 8809.5.4.

Design stresses shall be related to test results obtained in accordance with Table No. 88-J. Intermediate values between 3 and 10 psi (20.7 kPa and 69 kPa) may be interpolated.

**8809.7.2.** Design compression and tension values. Compression stresses for unreinforced masonry having a minimum design shear value of three psi (20.7 kPa) shall not exceed 100 psi (690 kPa). Design tension values for unreinforced masonry shall not be permitted.

**8809.8.** Five percent of the existing rod anchors utilized as all or part of the required wall anchors shall be tested in pullout by an approved testing laboratory. The minimum number tested shall be four per floor, with two tests at walls with joists framing into the wall and two tests at walls with joists parallel to the wall. The test apparatus shall be supported on the masonry wall at a minimum distance of the wall thickness from the anchor tested. The rod anchor shall be given a pre-load of 300 pounds (136 kg) prior to establishing a datum for

recording elongation. The tension test load reported shall be recorded at  $\frac{1}{8}$ -inch (3.2 mm) relative movement of the anchor and the adjacent masonry surface. Results of all tests shall be reported. The report shall include the test results as related to the wall thickness and joist orientation. The allowable resistance value of the existing anchors shall be 40 percent of the average of those tested anchors having the same wall thickness and joist orientation.

**8809.9.** Qualification tests for devices used for wall anchorage shall be tested with the entire tension load carried on the enlarged head at the exterior face of the wall. Bond on the part of the device between the enlarged head and the interior wall face shall be eliminated for the qualification tests. The resistance value assigned the device shall be 20 percent of the average of the ultimate loads.

## SECTION 8810 INFORMATION REQUIRED ON PLANS

**8810.1 General.** In addition to the seismic analysis required elsewhere in this Chapter, the licensed engineer or architect responsible for the seismic analysis of the building shall determine and record the information required by this section on the approved plans.

**8810.2 Construction details.** The following requirements, with appropriate construction details, shall be made part of the approved plans:

1. All unreinforced masonry walls shall be anchored at the roof and ceiling levels by tension bolts through the wall as specified in Table No. 88-I, or by an approved equivalent at a maximum anchor spacing of six feet (1829 mm). Anchors installed in accordance with Section 8114 of this Code shall be accepted as conforming to this requirement.

All unreinforced masonry walls shall be anchored at all floors and ceiling with tension bolts through the wall or by existing rod anchors at a maximum anchor spacing of six feet (1829 mm). All existing rod anchors shall be secured to the joists to develop the required forces. The Department may require testing to verify the adequacy of the embedded ends of existing rod anchors. Tests, when required, shall conform to Section 8809.8.

**Exception:** Walls need not be anchored to ceiling systems that, because of their low mass and/or relative location with respect to the floor or roof systems, would not impose significant normal forces on the wall and cause out-of-plane wall failures.

At the roof and all floor levels, the anchors nearest the building corners shall be combination shear and tension anchors located not more than two feet (610 mm) horizontally from the inside corners of the walls.

When access to the exterior face of the masonry wall is prevented by proximity of an existing building, wall anchors conforming to Items 5 and 7 in Table No. 88-I may be used.

Alternative devices to be used in lieu of tension bolts for masonry wall anchorage shall be tested as specified in Section 8809.9.



2. Diaphragm chord stresses of horizontal diaphragms shall be developed in existing materials or by addition of new materials.
3. Where trusses and beams other than rafters or joists are supported on masonry, independent secondary columns shall be installed to support vertical loads of the roof or floor members.
4. Parapets and exterior wall appendages not capable of resisting the forces specified in this Chapter shall be removed, stabilized or braced to ensure that the parapets and appendages remain in their original position.

The maximum height of an unbraced, unreinforced masonry parapet above the lower of either the level of tension anchors or roof sheathing shall not exceed one and one half times the thickness of the parapet wall. If the required parapet height exceeds this maximum height, a bracing system designed for the force factors specified in Table Nos. 88-E and 88-F for walls shall support the top of the parapet. Parapet corrective work must be performed in conjunction with the installation of tension roof anchors.

5. All deteriorated mortar joints in unreinforced masonry walls shall be pointed with Type S or N mortar. Prior to any pointing, the wall surface must be raked and cleaned to remove loose and deteriorated mortar. All preparation and pointing shall be done under the continuous inspection of a registered deputy inspector certified to inspect masonry or concrete. At the conclusion of the project, the inspector shall submit a written report to the Department setting forth the portion of work inspected.
6. Repair details of any cracked or damaged unreinforced masonry wall required to resist forces specified in this chapter.

**8810.3 Existing construction.** The following existing construction information shall be made a part of the approved plans:

1. The type and dimensions of existing walls and the size and spacing of floor and roof members.
2. The extent and type of existing wall anchorage to floors and roof.
3. The extent and type of parapet corrections which were performed in accordance with Section 8114 of this Code.
4. Accurately dimensioned floor plans and masonry wall elevations showing dimensioned openings, piers, wall thickness and heights, and veneer and anchorages.
5. The location of cracks or damaged portions of unreinforced masonry walls requiring repairs.
6. The type of interior wall surfaces and ceilings, and if reinstalling or anchoring existing plaster is necessary.
7. The general condition of the mortar joints and if the joints need pointing.
8. The location of the shear tests shall be shown on the floor plans and building wall elevations, and the complete test report shall be reproduced on the approved plans.

## SECTION 8811 DESIGN CHECK – COMPATIBILITY OF ROOF DIAPHRAGM STIFFNESS TO UNREINFORCED MASONRY WALL OUT-OF-PLANE STABILITY

**8811.1 General.** The requirements of this section are in addition to the requirements of Sections 8808 and 8809. The relative stiffness and strength of a diaphragm governs the amount of amplification of the seismic ground motion by the diaphragm and, therefore, a diaphragm stiffness and strength-related check of the out-of-plane stability of unreinforced masonry walls anchored to wood diaphragms shall be made. This section contains a procedure for the evaluation of the out-of-plane stability of unreinforced masonry walls anchored to wood diaphragms that are coupled to shear-resisting elements.

**8811.2 Requirements for terms.** The requirements for the terms used in this Chapter shall be defined as follows:

**CROSS WALL** is a wood-framed wall having a height-to-length ratio of:

1. Two to one for wood structural panels.
2. One to one for gypsum board, gypsum lath, cement plaster or diagonal sheathing.

The total strength of all cross walls located within any 40-foot (12 192 mm) length of diaphragm measured in the direction of the diaphragm span shall not be less than 30 percent of the strength of the diaphragm in the direction of consideration.

**DEMAND-CAPACITY RATIO (DCR)** is a ratio of the following:

1. Demand = lateral forces due to 33 percent of the weight of the diaphragm and the tributary weight of the walls and other elements anchored to the diaphragm.
2. Capacity = diaphragm total shear strength in the direction under consideration as determined using the values in Table No. 88-K or Table No. 88-L.

### 8811.3 Notations.

$D$  = depth of diaphragm, in feet (mm), measured perpendicular to the diaphragm span.

$h/t$  = height-to-thickness ratio of an unreinforced masonry wall. The height shall be measured between wall anchorage levels and the thickness shall be measured through the wall cross section.

$L$  = span of diaphragm between masonry shear walls or steel frames.

$V_c$  = total shear capacity of cross walls in the direction of analysis immediately below the diaphragm level being investigated as determined by using Tables 88-K and 88-L.

$v_u$  = maximum shear strength in pounds per foot for a diaphragm sheathed with any of the materials given in Tables 88-K and 88-L.

$W_d$  = total dead load of the diaphragm plus the tributary weight of the walls anchored to the diaphragm, the tributary ceiling and partitions and the weight of any other permanent building elements at the diaphragm level under investigation.

**8811.4 Design check procedure.**

**8811.4.1 General.** The demand-capacity ratio (DCR) for the building under investigation shall be calculated using the following equations:

$$DCR = 0.33W_d / 2v_u D \quad (\text{Formula 11-3})$$

or

$$DCR = 0.33W_d / (2v_u D + V_c) \quad (\text{Formula 11-4})$$

**8811.4.2 Diaphragm deflection.** The calculated DCR shall be to the left of the curve in Figure No. 88-A. Where the calculated DCR is outside (to the right of) the curve, the diaphragm deflection limits are exceeded, and cross walls may be used to reduce the deflection.

**8811.4.3 Unreinforced masonry wall out-of-plane stability.** The DCR shall be calculated discounting any cross walls. If the DCR corresponding to the diaphragm span is to the right of the curve in Figure No. 88-A, the region within the curve at and below the intersection of the diaphragm span with the curve may be used to determine the allowable h/t values per Table No. 88-G.

## SECTION 8812 VIOLATIONS

Notwithstanding any other provision of this Code to the contrary, it shall be unlawful for any person, firm, or corporation to maintain, use, or occupy any building within the scope of this chapter which does not meet the minimum earthquake standards specified in this Chapter.

Any person who violates, causes or permits another person to violate this provision is guilty of a misdemeanor. Any person includes an owner, lessor, sublessor, manager or person in control of a building subject to this Chapter. This term shall not include any person who is merely a tenant or other individual occupying any dwelling unit, efficiency dwelling unit, guest room or suite in a building. The legal owner of a building is that person, firm, corporation, partnership or other entity whose name or title appears on the record with the Office of the County Recorder, as well as all successors or assignees of these persons.

**Exception:** This section shall not apply to any building on which work is proceeding in compliance with the time limits set forth in this Chapter, and/or in compliance with any extensions of time granted by the Department or the Board; or any action, order or determination made by the Department or the Board in the implementation of this Chapter.

## SECTION 8813 SPECIAL REQUIREMENTS FOR VACANT BUILDINGS

**8813.1 General.** This section shall apply to every vacant unreinforced masonry bearing wall building within the scope of this Chapter which has not complied with the requirements contained in this Chapter.

**8813.2 Enforcement.** When the Department determines that a building is within the scope of this section, it shall notify the owner and order the owner to bring the building into compliance with the provisions of this section. Compliance with such an order shall be accomplished within the time limits set forth herein and any extensions of time granted by the Department. If the owner does not comply within such time limits, then the Department may order the demolition of the building or structure in accordance with the provisions of Section 8903.

**8813.3 Time for compliance.**

1. For a one-story building with wall anchors installed pursuant to Section 8808.3, either before or within 60 days after notice is given by the Department:

Within 180 days after notice is given pursuant to this section, the owner shall submit to the Department either plans and a structural analysis for the proposed structural alterations of the building necessary to comply with the minimum requirements of this Chapter, or an application for demolition of the building or structure.

If the owner elects to perform the proposed structural alterations, then within 270 days after notice is given pursuant to this section, the owner shall obtain the necessary permits for strengthening the building or structure; within 90 days of obtaining a permit to strengthen the building, the owner shall commence strengthening work; and within 18 months after notice is given pursuant to this section, the owner shall complete all strengthening work.

If the owner elects to demolish the building, then within 210 days after notice is given pursuant to this section, the owner shall obtain permits for the demolition of the building or structure; within 21 days of obtaining a demolition permit, the owner shall commence demolition; and within 300 days after notice is given pursuant to this section the owner shall complete the demolition of the building or structure.

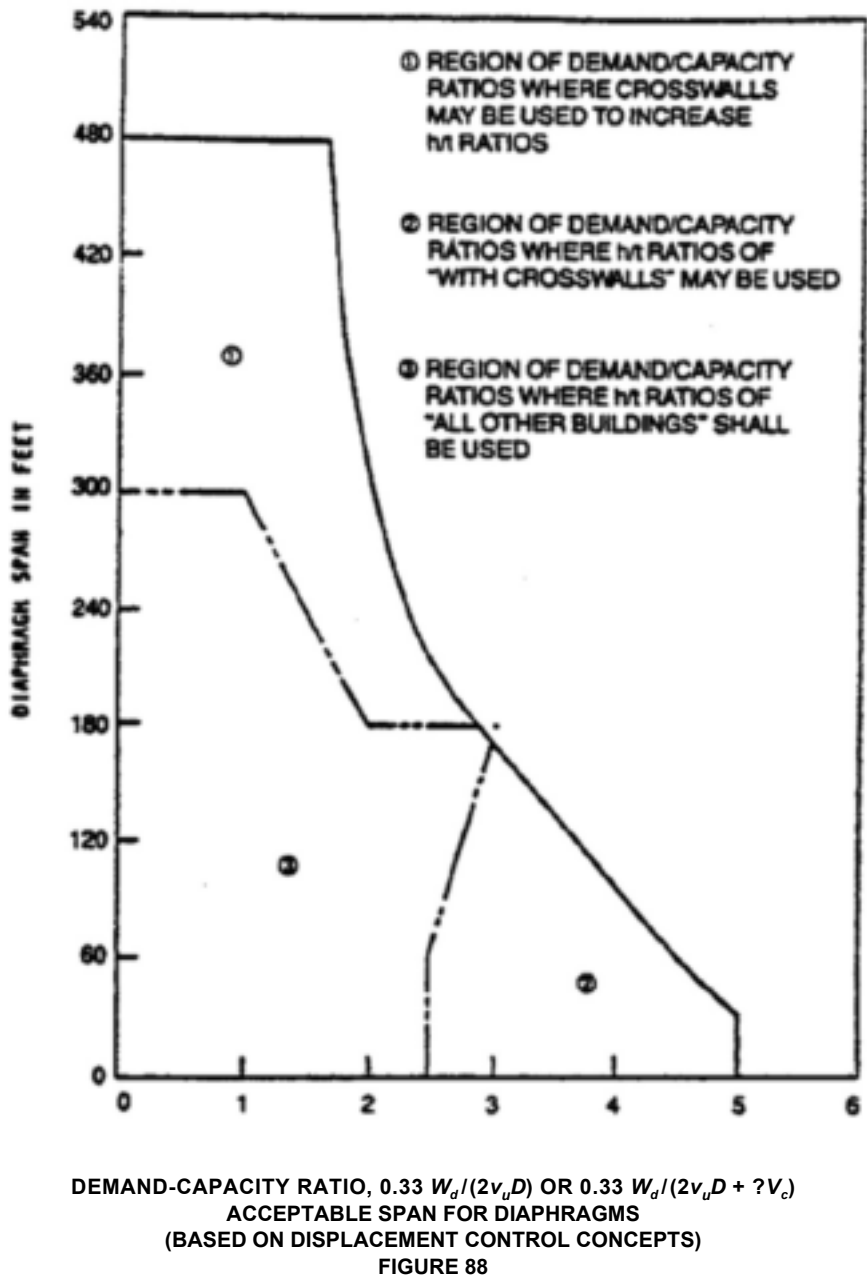
2. Time for compliance for all other buildings:

Within 60 days after notice is given pursuant to this section, the owner shall submit to the Department either plans and a structural analysis for the proposed structural alterations of the building necessary to comply with the minimum requirements of this Chapter, or an application for demolition of the building or structure.

If the owner elects to perform the necessary alterations, then within 120 days after notice is given pursuant to this section, the owner shall obtain the necessary permits for strengthening the building or structure; within 21 days of obtaining a permit, the owner shall begin work; and within 365 days after notice is given pursuant to this section, the owner shall complete all strengthening work.

If the owner elects to perform the necessary alterations, then within 120 days after notice is given pursuant to this section, the owner shall obtain the necessary permits for strengthening the building or structure; and within 120 days after obtaining the demolition permit, the owner shall complete the demolition of the building or structure.

**8813.4 Special provisions for damaged buildings.** An unreinforced masonry bearing wall building which is damaged or partially destroyed by fire, flood, wind, earthquake or other calamity or act of God or the public enemy shall be repaired or demolished within six months of such damage or destruction.



**TABLE 88-A  
RATING CLASSIFICATIONS**

TYPE OF BUILDING	CLASSIFICATION
Essential Building	I
High Risk Building	II
Medium Risk Building	III
Low Risk Building	IV

**TABLE 88-B  
TIME LIMITS FOR COMPLIANCE**

REQUIRED ACTION BY OWNER	OBTAIN BUILDING PERMIT WITHIN	COMMENCE CONSTRUCTION WITHIN	COMPLETE CONSTRUCTION WITHIN
Complete Structural Alterations or Building Demolition	1 year	180 days*	3 years
Wall Anchor Installation	180 days	270 days	1 year

\*Measured from date of building permit issuance.

**TABLE 88-C  
SERVICE PROVISIONS AND EXTENDED TIME PROVISIONS\*\***

RATING OCCUPANT CLASSIFICATION	EXTENSION OF TIME IF WALL ANCHORS LOAD	MINIMUM TIME PERIODS ARE INSTALLED	SERVICE OF ORDER
I (Highest Priority)	Any	1 Year	0
II	100 or more	1 Year	90 Days
III	100 or more	1 Year	1 Year
	More than 50, but less than 100	1 Year	2 Years
	More than 19, but less than 51	1 Year	3 Years
IV (Lowest Priority)	Less than 20	1 Year	4 Years

\*\*Buildings that have obtained a building permit for wall anchors and met the time schedule in Table 88-B for wall anchor installation may utilize the time extensions, which are permitted in Table 88-C prior to the adoption of this ordinance.

**TABLE 88-D  
HORIZONTAL FORCE FACTORS BASED ON RATING CLASSIFICATION**

RATING CLASSIFICATION	<i>IKCS</i>
I	0.186
II	0.133
III & IV	0.100

**TABLE 88-E  
HORIZONTAL FORCE FACTORS "*IS*" FOR PARTS OR PORTIONS OF STRUCTURES**

RATING CLASSIFICATION	<i>IS</i>
I	1.50
II	1.00
III & IV	0.75

**TABLE 88-F**  
**HORIZONTAL FORCE FACTOR “ $C_p$ ” FOR PARTS OR PORTIONS OF BUILDINGS OR OTHER STRUCTURES<sup>1</sup>**

PART OR PORTION OF BUILDINGS	DIRECTION OF FORCE	VALUE OF $C_p$
Exterior bearing and nonbearing walls; interior bearing walls and partitions; interior nonbearing walls and partitions over 10 feet in height; masonry fences over 6 feet in height.	Normal to flat surface	0.20
Cantilever parapet and other cantilever walls, except retaining walls.	Normal to flat surface	1.00
Exterior and interior ornamentations and appendages.	Any direction	1.00
When connected to or a part of a building: towers, tanks, towers and tanks plus contents, racks over 8 feet 3 inches in height plus contents, chimneys, smokestacks and penthouses.	Any direction	0.20 <sup>2,4</sup>
When connected to or a part of a building: rigid and rigidly mounted equipment and machinery not required for continued operation of essential occupancies. <sup>5</sup>	Any horizontal direction	0.20 <sup>3</sup>
Tanks plus effective contents resting on the ground.	Any direction	0.12
Floors and roofs acting as diaphragms.	In the plane of the diaphragm	0.12 <sup>6</sup>
Prefabricated structural elements, other than walls, with force applied at center of gravity of assembly.	Any horizontal direction	0.30
Connections for exterior panels or elements.	Any direction	2.00

For SI: 1 inch = 25.4 mm, 1 foot = 305 mm.

- See Section 8808.2 for use of  $C_p$ .
- When located in the upper portion of any building with a height to depth ratio of 5 to 1 or greater, the value shall be increased by 50 percent.
- For flexible and flexible mounted equipment and machinery, the appropriate values for  $C_p$  shall be determined with consideration given to both the dynamic properties of the equipment and machinery and to the building and building or structure in which it is placed.
- The  $W_p$  for storage racks shall be the weight of the racks plus contents. The value of  $C_p$  for racks over two storage support levels in height shall be 0.16 for the levels below the top two levels.
- The design of the equipment and machinery and their anchorage is an integral part of the design and specification of that equipment and machinery. The structure to which the equipment or machinery is mounted shall be capable of resisting the anchorage forces (see also Section 13.6.5 of ASCE-7).
- Floor and roofs acting as diaphragms shall be designed for a minimum force resulting from a  $C_p$  of 0.12 applied to  $W_p$  unless a greater force results from the distribution of lateral forces in accordance with Section 12.8.3 of ASCE-7.

**TABLE 88-G**  
**ALLOWABLE VALUE OF HEIGHT-TO-THICKNESS RATIO OF UNREINFORCED MASONRY WALLS WITH MINIMUM QUALITY MORTAR<sup>1,2</sup>**

	BUILDINGS W/ CROSS WALLS AS DEFINED BY SECTION 8803	ALL OTHER BUILDINGS
Walls of One-story Buildings	13 - 16 <sup>3,4,5</sup>	13
First-Story Wall of Multistory Buildings	16	15
Walls in Top Story of Multistory Buildings	9 - 14 <sup>3,4,5</sup>	9
All Other Walls	16	13

- Minimum quality mortar shall be determined by laboratory testing in accordance with Section 8809.5 of this Code.
- This table is not applicable to buildings of Rating Classification I. Walls of buildings within Rating Classification I shall be analyzed in accordance with Section 8808.6 of this Code.
- The minimum mortar shear strengths required in Footnotes 4 and 5 shall be that shear strength without the effect of axial stress in the wall at the point of the test.
- The larger height-to-thickness ratio may be used where mortar shear tests in accordance with Section 8809.5.3 of this Code establish a minimum mortar shear strength of not less than 100 psi (690 kPa) or where the tested mortar shear strength is not less than 60 psi (414 kPa) and a visual examination of the vertical wythe-to-wythe wall joint (collar joint) indicates not less than 50 percent mortar coverage.
- Where a visual examination of the collar joint indicates not less than 50 percent mortar coverage and the minimum mortar shear strength when established in accordance with Section 8809.5.3 of this Code is greater than 30 psi (207 kPa) but less than 60 psi (414 kPa), the allowable height-to-thickness ratio may be determined by linear interpolation between the larger and smaller ratios in direct proportion to the mortar shear strength.

**TABLE 88-H  
VALUES FOR EXISTING MATERIALS**

EXISTING MATERIALS OR CONFIGURATION OF MATERIALS <sup>1</sup>	ALLOWABLE VALUES
<b>1. HORIZONTAL DIAPHRAGMS</b>	
a. Roofs with straight sheathing and roofing applied directly to the sheathing.	100 lbs. per foot for seismic shear.
b. Roofs with diagonal sheathing and roofing applied directly to the sheathing.	400 lbs. per foot for seismic shear.
c. Floors with straight tongue-and-groove sheathing.	150 lbs. per foot for seismic shear.
d. Floors with straight sheathing and finished wood flooring.	300 lbs. per foot for seismic shear.
e. Floors with diagonal sheathing and finished wood flooring.	450 lbs. per foot for seismic shear.
f. Floors or roofs with straight sheathing and plaster applied to the joist or values for items 1(a) and 1(c) rafters. <sup>2</sup>	Add 50 lbs. per foot to the allowable values for items 1(a) and 1(c).
<b>2. SHEAR WALL</b> Wood stud walls with lath and plaster	100 lbs. per foot each side for seismic shear.
<b>3. PLAIN CONCRETE FOOTINGS</b>	$f'_c = 1500$ psi unless otherwise shown by tests.
<b>4. DOUGLAS FIR WOOD</b>	Allowable stress same as No. 1 D.F. <sup>3</sup>
<b>5. REINFORCING STEEL</b>	$f_y = 18,000$ lbs. per square inch maximum.
<b>6. STRUCTURAL STEEL</b>	$f_y = 20,000$ lbs. per square inch maximum.

For SI: 1 pound per foot = 0.0146 N/m, 1 pound per square inch (psi) = 6.895 kPa.

**Notes:**

- Material must be sound and in good condition.
- The wood lath and plaster must be reattached to existing joists or rafters in a manner approved by the Department.
- Stresses given may be increased for combinations of loads as specified in Section 8808.7.2 of this Code.

**TABLE 88-I  
ALLOWABLE VALUES OF NEW MATERIALS USED IN CONJUNCTION WITH EXISTING CONSTRUCTION**

NEW MATERIALS OR CONFIGURATION OF MATERIALS <sup>1</sup>	ALLOWABLE VALUES
<b>1. HORIZONTAL DIAPHRAGMS</b> Plywood sheathing applied directly over existing straight sheathing with ends of plywood sheets bearing on joists or rafters and edges of plywood located on center of individual sheathing boards.	Same as specified in Table 2306.3.1.(1) and 2306.2.1(2) of this code for blocked diaphragms.
<b>2. SHEAR WALLS</b>	
a. Plywood sheathing applied directly over existing wood studs. No value shall be given to plywood applied over existing plaster or wood sheathing.	Same as values specified in Table 2306.3 for shear walls.
b. Dry wall or plaster applied directly over existing wood studs.	75 percent of the values specified in Table 2306.7.
c. Dry wall or plaster applied to plywood sheathing over existing wood studs.	33 $\frac{1}{3}$ percent of the values specified in Table 2306.7
<b>3. SHEAR BOLTS</b> Shear bolts and shear dowels embedded a minimum of 8 inches into unreinforced masonry walls. Bolt centered in a 2 $\frac{1}{2}$ -inch-diameter hole with drypack or an approved nonshrink grout around circumference of bolt or dowel. <sup>1,3</sup>	133 percent of the values for plain solid masonry specified in Table No. 88-M. No values larger than those given for $\frac{3}{4}$ -inch bolts shall be used.
<b>4. TENSION BOLTS</b> Tension bolts and tension dowels extending entirely through unreinforced masonry secured with bearing plates on far side of wall with at least 30 square inches of area. <sup>2,3,4</sup>	1200 lbs. per bolt or dowel.
<b>5. COMBINATION SHEAR AND TENSION WALL ANCHORS</b>	
a. Bolts extending to the exterior face of the wall with a 2 $\frac{1}{2}$ -inch round plate under the head. Install as specified for shear bolts. Spaced not closer than 12 inches on center. <sup>1,2,3</sup>	600 lbs. per bolt for tension. <sup>4</sup> See Item 3 (SHEAR BOLTS) for shear values.
b. Bolts or dowels extending to the exterior face of the wall with a 2 $\frac{1}{2}$ -inch round plate under the head and drill at an angle of 22 $\frac{1}{2}$ degrees to the horizontal. Installed as specified for shear bolts. <sup>1,2,3</sup>	1200 lbs per bolt or dowel for tension. <sup>4</sup> See Item 3 (SHEAR BOLTS) for shear values.
c. Through bolt with bearing plate for tension per Item 4. Combined with minimum eight-inch grouted section for shear per Item 3.	See Item 4 (TENSION BOLTS) for tension values. <sup>4</sup> See Item 3 (SHEAR BOLTS) for shear values.
<b>6. INFILLED WALLS</b> Reinforced masonry infilled openings in existing unreinforced masonry walls with keys or dowels to match reinforcing.	Same as values specified for unreinforced masonry walls.
<b>7. REINFORCED MASONRY</b> Masonry piers and walls reinforced per Sections 2106 and 2107 of this Code.	Same as values determined per Section 2106.
<b>8. REINFORCED CONCRETE</b> Concrete footings, walls and piers reinforced as specified in Division 19 of this Code and designed for tributary loads.	Same as values specified in Chapter 19.
<b>9. EXISTING FOUNDATION LOADS</b> Foundation loads for structures exhibiting no evidence of settlement.	Calculated existing foundation loads due to maximum dead load plus live load may be increased 25 percent for dead load, and may be increased 50 percent for dead load plus seismic load required by this chapter.

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm<sup>2</sup>, 1 pound = 4.45 N.

- Bolts and dowels to be tested as specified in Section 8809.6 of this code.
- Bolts and dowels to be  $\frac{1}{2}$ -inch minimum in diameter.
- Drilling for bolts and dowels shall be done with an electric rotary drill. Impact tools shall not be used for drilling holes or tightening anchor and shear bolt nuts.
- Allowable bolt and dowel values specified are for installations in minimum three wythe walls. For installations in two wythe walls, use 50 percent of the value specified, except that no value shall be given to tension bolts that do not extend entirely through the wall and are secured with bearing plates on the far side.

**TABLE 88-J  
ALLOWABLE SHEAR STRESS FOR TESTED UNREINFORCED MASONRY WALLS**

EIGHTY PERCENT OF TEST RESULTS IN PSI NOT LESS THAN	AVERAGE TEST RESULTS OF CORES IN PSI	SEISMIC IN-PLANE SHEAR BASED ON GROSS AREA
30 plus axial stress	20	3 psi*
40 plus axial stress	27	4 psi*
50 plus axial stress	33	5 psi*
100 plus axial stress or more	67 or more	10 psi max*

For SI: 1 pound per square inch = 6.895 kPa.

\* Allowable shear stress may be increased by addition of 10 percent of the axial stress due to the weight of the wall directly above.

**TABLE 88-K  
VALUES FOR EXISTING MATERIALS**

EXISTING MATERIALS OR CONFIGURATION OF MATERIALS <sup>1</sup>	ALLOWABLE VALUES
1. HORIZONTAL DIAPHRAGMS a. Roofs with straight sheathing and roofing applied directly to the sheathing. b. Roofs with diagonal sheathing and roofing applied directly to the sheathing.	100 lbs. per foot for seismic shear. 250 lbs. per foot for seismic shear.
2. CROSSWALLS <sup>2,3</sup> a. Plaster on wood or metal lath. b. Plaster on gypsum lath. c. Gypsum wall board, unlocked edges. d. Gypsum wall board, blocked edges.	per side: 200 lbs. per foot for seismic shear. 175 lbs. per foot for seismic shear. 75 lbs. per foot for seismic shear. 125 lbs. per foot for seismic shear.

For SI: 1 pound per foot = 0.0146 N/m.

1. Materials must be sound and in good condition.

2. For crosswalls, values of all materials may be combined, except the total combined value shall not exceed 300 lbs. per foot for seismic shear.

3. The cross wall aspect ratio for plaster on wood, metal, or gypsum lath and gypsum wall board shall be a maximum height to width ratio of 1:1.

**TABLE 88-L  
ALLOWABLE VALUES OF NEW MATERIALS USED IN CONJUNCTION WITH EXISTING CONSTRUCTION**

NEW MATERIALS OR CONFIGURATION OF ALLOWABLE VALUES	NEW AND EXISTING MATERIALS <sup>1</sup>
1. HORIZONTAL DIAPHRAGMS Plywood sheathing applied directly over existing straight sheathing with ends of plywood sheets bearing on joists or rafters and edges of plywood located on center of individual sheathing boards.	225 lbs. per foot for seismic shear.
2. CROSSWALLS <sup>2,3</sup> a. Plywood sheathing applied directly over existing wood studs. No value shall be given to plywood applied over existing plaster or wood sheathing. b. Drywall or plaster applied directly over existing wood studs.	1.33 times the values specified in CBC Table 2306.3 for shear walls. 100 percent of the values specified in CBC Table 2306.7.

For SI: 1 pound per foot = 0.0146 N/m.

1. Materials must be sound and in good condition.

2. For cross walls, values of all materials may be combined, except the total combined value shall not exceed 300 lbs. per foot for seismic shear.

3. The cross wall aspect ratio for drywall, plaster and gypsum wall board shall be a maximum height to width ratio of 1:1, and for plywood shall be a maximum height to width ratio of 2:1.

**TABLE 88-M  
ALLOWABLE SHEAR ON BOLTS**

DIAMETER BOLT (inches)	EMBEDMENT (inches)	SOLID MASONRY (shear in pounds)	GROUTED MASONRY (shear in pounds)
$\frac{1}{2}$	4	350	750
$\frac{5}{8}$	4	500	750
$\frac{3}{4}$	5	750	1100
$\frac{7}{8}$	6	750	1100
1	7	750	1100
$1\frac{1}{8}$	8	750	1100

For SI: 1 inch = 25.4 mm, 1 pound = 0.454 kg.





## CHAPTER 89

# ABATEMENT OF BUILDINGS, STRUCTURES, PREMISES AND PORTIONS THEREOF WHICH CONSTITUTE A NUISANCE OR ARE HAZARDOUS, OR SUBSTANDARD

### SECTION 8901 GENERAL

**8901.1 Purpose of chapter.** It is the purpose of this Chapter to provide a just, equitable and practicable method, to be cumulated with and in addition to any other remedy available by law, whereby buildings, structures, premises and portions thereof which are within the scope of this chapter may be vacated, secured, cleaned, repaired, demolished or removed.

**8901.2 Scope.** The provisions of this Chapter shall apply to all existing buildings, structures, premises and portions thereof which are a nuisance, a hazard or a substandard residential building.

All sections of Chapter IX of the LAMC are applicable to those buildings determined to be "substandard residential buildings" as defined herein.

The Department may approve certain deviations from the requirements of Chapter IX of the LAMC concerning substandard residential buildings, provided the items concerned were built in compliance with code or ordinance provisions in effect at the time of construction, and provided, further, that such additional corrections as may be required by the Department are made so as to ensure that the building complies with the intent of the Code.

**8901.3 Interference prohibited.** It shall be unlawful for any person to obstruct, impede or interfere with any representative or inspector of the Department, including contractors hired by the Department or with the inspector of any department of the City, or with any person who owns or holds any estate or interest in any building or structure which has been ordered to be vacated, secured, cleaned, repaired, demolished or removed. It shall be unlawful for any person to obstruct, impede or interfere with any person to whom any building or structure has been lawfully sold pursuant to the provisions of this chapter whenever any representative of the Department, inspector, purchaser or person having an interest or estate in such building or structure is engaged in inspecting, securing, cleaning, vacating, repairing, demolishing or removing any such building or structure pursuant to the provisions of this Chapter, or in performing any necessary act preliminary to or incidental to such work, or authorized or directed pursuant hereto.

**8901.4 Liability of officers or employees of the city.**

**8901.4.1 City employees not personally liable.** No officer, agent, or employee of the City shall be personally liable for any damage incurred or alleged to be incurred as a result of any act required, permitted or authorized to be done or performed in the discharge of his or her duties pursuant to this Chapter.

**8901.4.2 Suits to be defended by city attorney.** Any suit brought against any officer, agent or employee of the City as a result of any act required, permitted or authorized in the discharge of his or her duties under this Chapter shall be deemed an action against the City and shall be defended by the City Attorney.

**8901.5 Other provisions of the municipal code unaffected hereby.** The provisions of this Chapter shall not be deemed to repeal by implication any other provision of the LAMC and the adoption hereof shall not be deemed to affect or diminish the power or authority of an officer or employee of the City to condemn any building or structure erected or maintained in violation of any other provisions of the LAMC.

**8901.6 Separability of provisions of this Chapter.** The City Council hereby declares that it would have adopted each separate provision of this Chapter, regardless of the adoption of any other provision, and if any remedy provided for in this Chapter be held unavailable or limited in effect, such limitation shall not affect the application of any other provision of this chapter.

**8901.7.** Unless otherwise expressly provided, the remedies or penalties provided by this chapter are cumulative to each other and to the remedies or penalties available under law.

The provisions set forth in Article 8, Chapter IX of the LAMC shall not apply to proceedings conducted pursuant to this Chapter. However, the Superintendent and the Board may utilize the procedures described therein, to the extent necessary to assure that an owner has a full and fair opportunity to present evidence relevant to the abatement of the public nuisance conditions on that owner's property.

**8901.8.** Wherever service is required in this Chapter, that service may be accomplished by personal service as authorized in California Code of Civil Procedure Sections 415.10, 415.20, and 415.21.

### SECTION 8902 DEFINITIONS

For the purpose of this Chapter, certain terms are defined as follows:

**DEPARTMENT.** Refer to Chapter 2 of this Code.

**HAZARDOUS BUILDING.** Any building, structure or portion thereof which has any or all of the following described defects:

1. Whenever any door, aisle, passageway, stairway or other means of exit is not of sufficient width or size, or is not so arranged as to provide safe and adequate means of exit, in case of fire or panic, for all persons housed or assembled therein who would be required to,

**ABATEMENT OF BUILDINGS, STRUCTURES, PREMISES AND PORTIONS THEREOF  
WHICH CONSTITUTE A NUISANCE OR ARE HAZARDOUS, OR SUBSTANDARD**

- or might, use such door, aisle, passageway, stairway or other means of exit.
2. Whenever the stress in any materials, member or portion thereof, due to all dead and live loads, is more than 1½ times the working stress or stresses allowed in Article 1, Chapter IX of the LAMC.
  3. Whenever any portion of a building or structure has been damaged by earthquake, wind, flood, or by any other event, in such a manner that the structural strength or stability thereof is appreciably less than it was before such event and is less than the minimum requirements of this Code for a new building of similar structure, purpose or location.
  4. Whenever any portion of any member or appurtenance thereof is likely to fall, or to become detached or dislodged, or to collapse and thereby injure persons or damage property.
  5. Whenever any portion of a building or any member or appurtenance thereof or ornamentation on the exterior thereof is not of sufficient strength or stability or is not so anchored, attached or fastened in place so as to be capable of resisting one half the wind pressure that specified in this Code without exceeding the working stresses permitted in this Code.
  6. Whenever any portion thereof has settled to such an extent that walls or other structural portions have materially less resistance to winds or earthquakes than is required in the case of new construction.
  7. Whenever the building or structure, or any portion thereof, because of dilapidation, deterioration, decay, faulty construction, or because of the removal or movement of some portion of the ground necessary for the purpose of supporting such building, or portion thereof, or some other cause, is likely to partially or completely collapse, or some portion of the foundation or underpinning is likely to fall or give way.
  8. Whenever, for any reason whatsoever, the building or structure, or any portion thereof, is manifestly unsafe for the purpose for which it is used.
  9. Whenever the exterior walls or other vertical structural members list, lean or buckle to such an extent that a plumb line passing through the center of gravity does not fall inside the middle third of the base.
  10. Whenever the building or structure, exclusive of the foundation, shows 33 percent or more damage or deterioration to the member or members, or 50 percent damage or deterioration or a nonsupporting enclosing or outside wall or covering.
  11. Whenever the building or structure has been so damaged by fire, wind, earthquake or flood or has become so dilapidated or deteriorated as to become an attractive nuisance to children who might play therein to their danger, or as to afford a harbor for vagrants, criminals or immoral persons or as to enable persons to resort thereto for the purpose of committing nuisance or unlawful or immoral acts.

12. Any building or structure constructed, or which now exists or is maintained in violation of any specific requirements or prohibition of the building regulations of this City, as set forth in Article 1, Chapter IX of the LAMC or of any provisions of Article 7, Chapter V of the LAMC, or of Article 1 of Chapter III of the LAMC, or of any law or ordinance of this state or City relating to the condition, location or structure of buildings.
13. Any building or structure which, whether or not erected in accordance with all applicable laws and ordinances, has in any nonsupporting part, member or portion, less than 50 percent, or in any supporting member less than 66 percent, of the strength, fire-resisting qualities or characteristics or weather-resisting qualities or characteristics required by law or ordinance in the case of a newly constructed building of like area, height and occupancy in the same location.
14. Whenever a building or structure, used or intended to be used for dwelling purposes, because of dilapidation, decay, damage or faulty construction or arrangement, or otherwise, is insanitary or unfit for human habitation or is in a condition that is likely to cause sickness or disease, when so determined by the health officer, or is likely to work injury to the health, safety or general welfare of those living within.
15. Whenever the building or structure, used or intended to be used for dwelling purposes, has light, air and sanitation facilities inadequate to protect the health, safety or general welfare of persons living within.
16. Whenever any building or structure by reason of obsolescence, dilapidated condition, deterioration, damage, electric wiring, gas connections, heating apparatus or other cause, is in such condition as to be a fire hazard and is so situated as to endanger life or other buildings or property in the vicinity or provide a ready fuel supply to augment the spread and intensity of fire arising from any cause.
17. Whenever any fire-protective construction or safety device does not provide the degree of security to life and property required by the *Los Angeles Municipal Code*.
18. Whenever a building or structure is classified as a "Substandard Building."
19. Whenever a building or structure has become vacant and vandalized.
20. Whenever a building or structure has become a nuisance.

**NUISANCE.** Any premises, building, structure or portion thereof containing multiple code violations or one or more imminent life hazards.

**SUBSTANDARD BUILDING.** Any building, or portion thereof, including any dwelling unit, guest room or suite of rooms, or the premises on which the same is located, in which there exists any of the following listed conditions to an extent that endangers the life, limb, health, property, safety or welfare of the public or the occupants thereof.

**8902.1 Inadequate sanitation.** Inadequate sanitation shall include, but not be limited to, the following:

1. Lack of or improper water closet, lavatory, bathtub or shower in a dwelling unit.
2. Lack of or improper water closets, lavatories and bathtubs or showers per number of guests in a hotel.
3. Lack of or improper kitchen sink.
4. Lack of hot and cold running water to plumbing fixtures in a hotel.
5. Lack of hot and cold running water to plumbing fixtures in a dwelling unit.
6. Lack of adequate heating.
7. Lack of or improper operation of required ventilating equipment.
8. Lack of minimum amounts of natural light and ventilation required by this Code.
9. Room and space dimensions less than required by this Code.
10. Lack of required electrical lighting.
11. Dampness of habitable rooms.
12. Infestation of insects, vermin or rodents as determined by the health officer.
13. General dilapidation or improper maintenance.
14. Lack of connection to required sewage disposal system.
15. Lack of adequate garbage and rubbish storage and removal facilities as determined by the health officer.

**8902.2 Structural hazards.** Structural hazards shall include, but not be limited to, the following:

1. Deteriorated or inadequate foundations.
2. Defective or deteriorated flooring or floor supports.
3. Flooring or floor supports of insufficient size to carry imposed loads with safety.
4. Members of walls, partitions or other vertical supports that split, lean, list or buckle due to defective material or deterioration.
5. Members of walls, partitions or other vertical supports that are of insufficient size to carry imposed loads with safety.
6. Members of ceilings, roofs, ceiling and roof supports or other horizontal members which sag, split or buckle due to defective material or deterioration.
7. Members of ceilings, roofs, ceiling and roof supports, or other horizontal members that are of insufficient size to carry imposed loads with safety.
8. Fireplaces or chimneys which list, bulge or settle, due to defective material or deterioration.
9. Fireplaces or chimneys which are of insufficient size or strength to carry imposed loads with safety.

**8902.3 Nuisance.** Any nuisance as defined in this Code.

**8902.4 Hazardous wiring.** All wiring except that which conformed with all applicable laws in effect at the time of installation and which has been maintained in good condition and is being used in a safe manner.

**8902.5 Hazardous plumbing.** All plumbing except that which conformed with all applicable laws in effect at the time of installation and which has been maintained in good condition and which is free of cross-connections and siphonage between fixtures.

**8902.6 Hazardous mechanical equipment.** All mechanical equipment, including vents, except that which conformed with all applicable laws in effect at the time of installation and which has been maintained in good and safe condition.

**8902.7 Faulty weather protection.** Shall include, but not be limited to, the following:

1. Deteriorated, crumbling or loose plaster.
2. Deteriorated or ineffective waterproofing of exterior walls, roof, foundations or floors, including broken windows or doors.
3. Defective or lack of weather protection for exterior wall coverings, including lack of paint, or weathering due to lack of paint or other approved protective covering.
4. Broken, rotted, split or buckled exterior wall coverings or roof coverings.

**8902.8 Fire hazard.** Any building or portion thereof, device, apparatus, equipment, combustible waste or vegetation which, in the opinion of the Chief of the Fire Department or the Chief's deputy, is in such a condition as to cause a fire or explosion or provide a ready fuel to augment the spread and intensity of fire or explosion arising from any cause.

**8902.9 Faulty materials of construction.** All construction materials except those which are specifically allowed or approved by this Code and which have been adequately maintained in a good and safe condition.

**8902.10 Hazardous or unsanitary premises.** Those premises on which an accumulation of weeds, vegetation, junk, dead organic matter, debris, garbage, offal, rat harborages, stagnant water, combustible materials and similar materials or conditions constitute fire, health or safety hazards.

**8902.11 Inadequate maintenance.** Any building or portion thereof which is determined to be an unsafe building in accordance with the standards set forth in Section 8104.

**8902.12 Inadequate exits.** All buildings or portions thereof not provided with adequate exit facilities as required by this Code except those buildings or portions thereof whose exit facilities conformed with all applicable laws at the time of their construction and which have been adequately maintained and increased in relation to any increase in occupant load, alteration or addition, or any change in occupancy.

When an unsafe condition exists through lack of, or improper location of an exit, additional exits may be required to be installed.

**8902.13 Inadequate fire-protection or fire-fighting equipment.** All buildings or portions thereof which are not provided with the fire-resistive construction or fire-extinguishing systems or equipment required by this Code, except those

buildings or portions thereof which conformed with all applicable laws at the time of their construction and whose fire-resistive integrity and fire-extinguishing systems or equipment have been adequately maintained and improved in relation to any increase in occupant load, alteration or addition, or any change in occupancy.

**8902.14 Illegal occupancy.** All buildings or portions thereof occupied for living, sleeping, cooking or dining purposes which were not designed or intended to be used for such occupancies.

## SECTION 8903 ABATEMENT PROCEDURES

### 8903.1 Issuance of initial orders.

**8903.1.1 Notification.** Whenever the Department determines that any building, structure, or premises is within the scope of this Chapter, the Department shall issue an order to the owner as shown in the last equalized assessment roll.

The order shall specify the conditions which cause the building or premises to be within the scope of this Chapter of this Code; whereupon the owner or owner's agent shall obtain the necessary permits and abate the deficiencies in accordance with Section 8903.1.2.

The order shall also require that the owner maintain the vacant buildings or structures vacant until they are repaired or demolished.

The requirements of this Chapter shall also apply to any building, structure, attached or detached appurtenances, or premises as determined by the Department.

**8903.1.2 Time for compliance.** Within 30 days after notice is served, the owner or the owner's agents shall obtain the necessary permits and shall commence work to abate the deficiencies. All necessary work shall be completed within 90 days after notice is served.

**8903.1.3 Order to vacate.** If the necessary permits are not obtained or the required work is not physically commenced within 45 days after notice is given, or the identified deficient conditions are not corrected within 90 days after notice is given, the Department may order the owner to cause the building to be vacated and may also institute enforcement action as provided in this chapter.

**8903.1.4 Vacated buildings.** No person shall reoccupy any building within the scope of this chapter which is found to be vacant or is ordered vacated in accordance with LAMC Subsection 8903.1.3, until the deficiencies have been abated and a new Certificate of Occupancy or clearance is obtained from the Department. Subsequent to issuance of an Order to Vacate any Certificate of Occupancy previously issued for such building shall be void.

**8903.1.5 Posting of buildings.** Vacated buildings shall be locked by the owner and otherwise secured against ingress. If the Department has ordered that a building be vacated or that the owner maintain a building vacant, then

the Department shall post thereon, in a conspicuous place near the entrance, a warning placard or sign.

A warning placard or sign posted pursuant to this Chapter shall not be defaced, covered, removed or hidden from view in any manner.

The placard or sign posted shall read substantially as follows:

**VACATED BUILDING – DO NOT ENTER BY ORDER OF THE DEPARTMENT OF BUILDING AND SAFETY CITY OF LOS ANGELES**

It is a misdemeanor to enter or occupy or be present in this building. It is a misdemeanor to remove, deface, cover, or hide this placard. SEC. 8903 *Los Angeles Municipal Code*.

**8903.1.6 Removal of utilities.** Utility connections of electricity and gas shall be removed from buildings within the scope of Section 8903.1.4 by the appropriate utility agency and shall not be reconnected until clearance is obtained from the Department.

**8903.1.7 Recordation.** At the time that the Department serves the order described in Section 8903.1, the Department shall file with the Office of the County Recorder a certificate stating that the subject building has been determined to be either a hazardous building, a substandard residential building, or a nuisance, that it has been ordered repaired or demolished, and that the owner thereof has been so notified.

After the building has been repaired or demolished, the Department shall file with the Office of the County Recorder a certificate terminating the above recorded status of the subject building.

**8903.1.8 Manner of giving notice.** The orders described in this Section shall be given in writing and may be given either by personal delivery thereof to the person to be notified or by deposit in the United States mail in a sealed envelope, postage prepaid, addressed to such person to be notified at the address as shown on the last equalized assessment roll. Service by mail shall be deemed to have been completed at the time of deposit in the post office. The failure of any owner or other person to receive such notice shall not affect in any manner the validity of any of the proceedings taken thereunder. Proof of giving any notice may be made by an affidavit of any employee of the City which shows service in conformity with this Section.

### 8903.2 Violations - penalties for disregarding initial orders.

**8903.2.1.** The owner or other person having charge and control over any building or structure determined by the Department to fall within the scope of this Chapter who shall fail to comply with any order to repair, vacate and repair, or demolish said building, structure or premises within the time limits established in this Chapter shall be guilty of a misdemeanor.

**8903.2.2.** The occupant or lessee in possession who fails to comply with any order to vacate said building in accordance with any order given as provided for in this Chapter shall be guilty of a misdemeanor.

**8903.2.3.** Any person who removes any notice or order posted as required in this Chapter shall be guilty of a misdemeanor.

**8903.2.4.** No person shall enter, occupy or be present in a building which has been posted by the Department pursuant to this Section. Any person who enters, occupies or is present in a building which has been posted by the Department pursuant to this Section shall be guilty of a misdemeanor. This prohibition shall not apply to public officers or public employees acting within the course and scope of their employment or in the performance of their official duties; or owners, persons acting with the consent of the building owner, the owner's agent, or person in lawful possession acting in the course of complying with an order issued pursuant to the provisions of this Chapter.

Notwithstanding any other provision of the *Los Angeles Municipal Code* to the contrary, a police officer with the Los Angeles Police Department shall have the authority to enter any building posted by the Department pursuant to this Section, and arrest anyone present in violation of this Section. Overnight security shall require Department approval to determine the location does not present a safety hazard to overnight security personnel.

**8903.3 Enforcement - non-compliance with department orders.**

**8903.3.1 General.** Whenever compliance with an order issued pursuant to the provisions of this Chapter for vacated or occupied buildings has not been accomplished within the time set or any additional time as may have been granted under the appellate provisions of this Chapter, the Department may institute appropriate action to secure compliance as provided by law for misdemeanor violation or may cause, by whatever means the Department determines appropriate, the correction of the deficiencies, whether the building is vacated or occupied, including but not limited to vacation and demolition of the building or structure and the monitoring and removal of asbestos.

**8903.3.2 Determination of interested parties.** When the Department determines to cause the correction of the deficiencies or the demolition of a building or structure, it shall obtain a title report either from the Division of Real Estate, Bureau of Engineering, Department of Public Works, City of Los Angeles or by contracting with one or more private title reporting agencies. Said title report shall list all persons shown on the records of the County Recorder as having an ownership interest or liens or encumbrances or other interests in the real property on which the building or structure is located.

**8903.3.3 Notification—notice of intention.** When the Department determines that the owner shall correct the deficiencies or shall demolish the building or structure, the Department shall notify the owner as identified in the title report and other persons listed in the title report as having an interest in the real property.

The Notice of Intention shall describe the land and notify the owner of the intention of the City to cause the correction of the deficiencies or the demolition of the

building or structure located on the land, and shall specify a date certain upon or after which the Department shall solicit bids or execute a work order, and shall have the authority to advise that any time thereafter the Department may execute an agreement to do such work. The Department shall also notify the owner that the City will cause the cost of such repair or demolition plus an amount equal to 40 percent of such cost, but not less than \$100.00, to cover the cost of the City administering the contract and supervising the required work, to be made a lien against real property on which the building or structure is located. In the event that a contractor offers to pay the City to demolish a building in order to obtain the salvage material, the City's administrative charge shall be 40 percent of the amount paid by the contractor, but not less than \$100.00. Finally, the notice shall advise of the owner's right to a hearing.

The date for solicitation of bids or execution of the work order shall not be sooner than 10 days following the mailing of the notices by certified mail as described in Section 8903.3.4. The award of the contract for such repair or removal may be given at any time following the receipt of bids.

One or more "Annual Unit-price Contracts" may be awarded by the Department for the demolition of "privately owned, readily accessible one and two-story wood-frame structures on level lots". In the event one or more such contracts have been executed which are applicable to the building which is to be removed, the notice shall advise that the work shall be pursuant to such contract, and that following a date certain, not less than 10 days following the mailing of notice by certified mail, the City pursuant to such contract shall have the authority to order the contractor to perform the work at the prices specified in said "Unit-price Contract". For the purposes of this subsection an "Annual Unit-price Contract" shall mean a 12-month contract awarded by the Department after competitive bidding based on both stipulated prices and price per square foot of building area for the demolition and removal of buildings, structures and accompanying items on certain properties when and as directed by the Department by means of a work order. No work order shall be executed except in conjunction with the necessary contract or contracts.

The Department shall have the authority to award contracts for the demolition of all other types of buildings or structures by soliciting competitive bids. The General Manager shall have the authority to establish procedures and deadlines for soliciting competitive bids from any interested contractors. In addition, the General Manager shall have the authority to establish procedures for the pre-qualification of contractors in a manner consistent with the requirements of Section 386 of the Charter and subject to the approval of the City Attorney.

**8903.3.4 Method of notification.** The notice required by this section shall be sent to each required person by certified mail, postage prepaid, return receipt requested, at the address or addresses of such persons as it appears on the last equalized assessment roll of the County Recorder or as known to the City Engineer. If for any reason the certified

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letter is returned, whether undeliverable or refused, another copy of the letter shall be sent by first-class mail, postage prepaid.

Further, a copy of any order or notice issued under this section shall be posted in a conspicuous place upon the building or structure involved.

The failure of any owner or other person to receive such notice shall not affect in any manner the validity of any proceedings taken thereunder.

**8903.3.5 Affidavit of service.** The employee of the Department, upon serving the notice as required in this section, shall create an affidavit certifying to the date and manner in which such notice was served. Any receipt card which may have been returned to the employee in acknowledgment of the receipt of such notice by certified mail shall be maintained with the affidavit.

**8903.4 Owner's loss of rights.**

**8903.4.1 General.** Whenever the Department has undertaken action to correct deficiencies, secure or demolish any building, structure or portion thereof under the provisions of this Chapter upon failure of the owner or person in apparent charge or control of the property to comply with an order therefor, and has caused the solicitation of bids or executed a work order to accomplish such work, the owner or person in apparent charge or control of the property shall be deemed to have forfeited all further rights and privileges to do such work and is thereafter prohibited from doing any such work, except as the Department may otherwise allow.

**8903.4.2 Penalty for performing work prior to contract awarding.** In the event that the owner or other person having charge or control of such building or structure proceeds to perform the corrective work or demolish said building or structure, with or without the permission of the Department or Board, after bids have been solicited or a work order executed, but prior to the award of the contract or the acceptance of the work order by the contractor, a charge shall be imposed upon such person as partial reimbursement to the City for any expenses incurred by it in the proceeding. Such charge shall be in the amount of 20 percent of the lowest bid for the demolition or repair contract or of the work order charge, whichever applies, but in no event less than the sum of \$75.00.

**8903.4.3 Penalty for performing work after contract is awarded.** If the owner or other person having charge or control of the building or structure proceeds to perform the corrective work or demolish the building or structure after the award of the demolition or repair contract or after the acceptance of the work order by the contractor, but before the contractor has commenced performance, a charge shall be imposed upon such person in an amount which shall be the sum of a charge computed as in Section 8903.4.2 plus the amount of the contractor's claim filed with the City Clerk and approved by the Department pursuant to the provisions of Section 8903.5.

**8903.5 Cancellation of contract or work order.**

**8903.5.1 General.** If, for any reason, the Department wishes to cancel a demolition or repair contract after it has

been awarded or a work order after it has been executed and accepted, it may do so by written notification delivered to the contractor any time prior to the commencement of the work. When the Department determines that expediency so requires, an oral notice of cancellation may be given, immediately followed by its confirmation in writing. Upon receipt of such oral or written notification the contractor shall take no further action toward demolition or repair of the building or structure.

**8903.5.2 Compensation of contractor - cancellation of contract or work order.** Upon cancellation of a demolition or repair contract by the Department, the contractor may submit a claim to the City Clerk in an amount up to 25 percent of the contract price, but not to exceed the sum of \$1,000.00, payment of which contractor shall accept as compensation for all real and anticipated expenses and profits.

Upon cancellation of a work order by the Department, the contractor may submit a claim to the City Clerk up to the amount of \$200.00, payment of which contractor shall accept as compensation for all real and anticipated expenses and profits.

**8903.5.3 Source of contractor reimbursement funds.** Claims submitted pursuant to Section 8903.5.2 and to the extent approved by the Department shall be paid by the Department out of the Repair and Demolition Fund. Where the amount of the claim has been made a charge against the owner or other party of interest pursuant to Section 8903.4.3, or where the demolition or repair contract or work order was canceled by the Department at the request of the owner or other party of interest, such party shall reimburse the City for the amount of the claim filed with the City Clerk and approved by the Department or paid from the repair and demolition fund.

**8903.6 Failure to pay charges.** Should the owner or other party of interest fail to pay, within 30 days after billing thereof, any charge imposed upon such party pursuant to Sections 8903.5.2 or 8903.5.3, the Department shall transmit any unpaid claim to the Office of the City Attorney for collection and/or appropriate legal remedy as determined by the Office of the City Attorney.

**8903.7 Appeals and hearings.**

**8903.7.1 Appeals.** Upon written application by an interested party within 30 days from the service of the initial order as provided for in Section 8903.1, for good cause shown and where no imminent risk of life or property is present, the Department or the Board, in case an appeal is made to it pursuant to Section 98.403.2, may grant a reasonable extension of time, not to exceed 120 days after expiration of the 30 day period provided for in the initial order, within which the work required must be commenced.

Nothing in this subsection precludes the Board from establishing a policy of granting less than the maximum time to comply with Department orders.

**8903.7.2 Hearings.**

A. Upon the issuance of a Notice of Intention, as provided for in Section 8903.3, any owner or party of

interest may appeal in writing to the Board for a hearing to determine the condition of the property, whether it falls within the scope of this Chapter; whether it should be repaired or demolished and how much time should be given to complete the required work. The request for the hearing shall be made prior to the date set to solicit bids or execute a work order as specified in the Notice of Intention. A request after such date may not be accepted for processing unless it is submitted prior to the Department's awarding a contract or issuing a work order and it is authorized by the Board. Failure of the owner or any party of interest in the property to request a hearing within the specified time or failure to pay the required filing fees shall be deemed a waiver of request for such a hearing.

- B. At the hearing the Department shall submit for the record evidence to show whether or not the building or structure falls within the scope of this Chapter. The evidence shall consist of, but need not be limited to, the inspection report originally issued by the Department pursuant to Section 8903.1, recent pictures and testimony by a representative of the Department. The owner or any party of interest shall have the opportunity prior to the hearing to examine the evidence to be submitted by the Department. The owner, the owner's representative or counsel, or a party of interest should be present at the hearing and will be given the opportunity to present any relevant evidence or witnesses, cross-examine any Department witnesses and ask questions or make comments concerning the Department's evidence and testimony. Failure of the owner or the owner's representative to appear at the hearing after receiving notice of the hearing shall be deemed a waiver of hearing rights.
- C. At the conclusion of the hearing, the Board shall make findings and determine whether the building falls within the scope of this Chapter and whether the building or structure should be repaired or demolished and how much time, if any, should be given for compliance with the Department's order.

**8903.7.3 Time limits for vacant buildings.** Any appeal or request for hearing to the Board for an extension of time to repair or demolish a vacant privately owned building shall be decided by the Board no later than 30 days after the hearing thereon and may be granted only on the condition that such repairs be completed within a maximum period of 180 days after the date of the Board's first action to grant an extension of time and on the further condition that no additional time will be granted.

**8903.7.4 Notification.** Only those persons who request a hearing need to be notified of the date and time of the hearing. Notification shall be made by certified mail, postage prepaid, return receipt requested, to the address as shown on the hearing request application. The employee of the Department, upon giving notice as provided in this Chapter, shall create an affidavit thereof certifying to the date and manner in which such notice was served. Any

receipt card which may have been returned to the employee in acknowledgment of the receipt of such notice by certified mail shall be maintained with the affidavit.

#### SECTION 8904 SPECIAL PROVISIONS FOR VACANT PROPERTY GRAFFITI REMOVAL

Duties of the Owner of Vacant Property. It shall be unlawful for the owner or person in control of a parcel of land to permit the accumulation of trash, debris, vehicle parts, rubbish, excessive vegetation or other similar nuisance conditions on a parcel or in and around any building or structure located on a parcel. The Department may order the fencing of such a parcel in the manner described below.

It shall be unlawful for the owner or person in control of a parcel of land, to allow a vacant building or structure to be open to unauthorized entry on that land. The entire building or structure shall be securely maintained. The owner or person in control of a vacant building, structure, or lot which is open to unauthorized entry shall secure all openings, accessible for entry from the exterior of the building or structure, and where appropriate, the entire lot itself, with one of the following methods:

1. Minimum  $\frac{3}{4}$  inch (19.05 mm) exterior grade plywood. The plywood shall have a positive connection to the building or structure using minimum  $\frac{1}{2}$  inch (12.7 mm) bolts which shall not be removable from the outside.
2. Minimum 16-gauge steel mesh attached to a minimum 1 inch by  $\frac{1}{8}$  inch (25 mm x 3.175 mm) angle iron frame. The frame shall have a positive connection to the building or structure using minimum  $\frac{1}{2}$  inch (12.7 mm) bolts which shall not be removable from the outside.
3. Other means of barricading as directed or approved by the Department including wrought iron fencing of the lot. The Department may, working in cooperation with the Police Department, develop standards for alternative fencing.

Unless directed otherwise by the Department, the owner or person in control of a parcel of land also shall erect a 10 foot (3048 mm) high, unobstructed, chain link fence complete with lockable gates. The fence, once constructed, shall become the property of the owner of the property upon which it is constructed and, all structures on the property, including the fence shall be maintained in good repair. In the event that the fence or other barriers cannot be maintained in good repair, the Department may order an alternative method of barricading. The property so fenced shall be conspicuously posted with a "No Trespassing" sign pursuant to Section 41.24.

It shall also be unlawful for the owner or person in control of a parcel of land to allow to exist any graffiti on any walls, temporary or permanent structures, places, or other surfaces when that graffiti, as defined in Section 49.84.2, is visible from a public street or other public or private property.

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Owners or the person in control of a parcel of land, whose property displays graffiti, shall completely remove the graffiti by washing, sandblasting or chemical treatment or shall completely and uniformly cover or otherwise obscure the graffiti with paint or other approved materials.

It is unlawful to maintain a swimming pool in violation of Sections 3109 and 6109. The 10 foot (3048 mm) high chain link fence described above may be used to comply with Section 3109. The swimming pool water shall be removed if the property is vacant.

**8904.1.1 Procedure for securing vacant property and removing graffiti - notification.** The City Council finds that the following conditions constitute a public nuisance: the maintenance of vacant buildings or structures open to unauthorized entry; the storage and accumulation of trash, debris, vehicle parts or other items prohibited under Section 8904 of the this Code; and the maintenance of vacant or occupied property with graffiti visible from a public street or alley as described by Section 8904 of this Code.

If the property owner or person in control consents to the removal of the graffiti, the City may enter upon the property and remove such graffiti.

If the owner or person in control refuses to remove the graffiti, or if any of the public nuisance conditions above-described exist, then the Department of Building and Safety may issue an order by certified mail, return receipt requested, or may deposit an order in the United States mail in a sealed envelope, postage prepaid, to the owner as shown on the last equalized assessment roll to abate these conditions. A copy of the order shall also be posted on the subject property. The order may give no more than ten days from the date the notice was mailed to perform the work.

However, if the order is served by way of personal service, the order may give no more than five days from the date the order was served to perform the work.

**8904.1.2 Abatement by the city.** In the event the nuisance, including graffiti, is not removed or otherwise eliminated or abated by the date specified in the notice, the City, or its contractor, may enter upon the parcel and remove or eliminate the nuisance. Abatement may be accomplished by contract or work order and may be performed by a private contractor submitting a competitive sealed bid, a public entity performing under a Memorandum of Understanding or by means of an Annual Awarded Contract.

For the purposes of this section, an Annual Awarded Contract shall mean one or more 12-month contracts awarded by the Department after competitive bidding. The contracts may be based upon both stipulated prices and unit cost for the fencing of vacant or vacated property; for removal of graffiti visible from a public street or alley; for draining swimming pools; for the securing of vacant buildings open to unauthorized entry; for the removal of debris, rubbish, excessive vegetation, weed abatement or similar nuisance conditions on property containing a vacant building or vacant lots, when and as directed by the Department by means of a work order. No work order shall be exe-

cuted except in conjunction with the necessary contract or contracts.

If abatement is performed by a City department other than the Department, that department shall bill the owner for the cost of removal, or other elimination or abatement of the nuisance, including administrative costs. An itemized written report showing the date and cost of abatement work done by the City or its contractor shall be submitted to the Department. Payment for the cost of abatement and recovery of the cost from the property owner shall be pursuant to Section 8906.

If a building again becomes open to unauthorized entry, or graffiti is again visible from a public street or alley, or the building's premises or vacant parcel again contain debris, rubbish, excessive vegetation or other similar nuisance conditions, the Department may, upon 3 days' notice to the owner, execute a contract or work order to have the required work performed by one of the methods provided by this section. The cost of performing the work may be paid from the "Repair and Demolition Fund" as established in Section 8906. Further, the provisions of Sections 8903.4, 8903.5 and 8903.6 shall apply to this section.

The above abatement procedures are in addition to any other remedy the Department may choose to pursue to eliminate the nuisance conditions.

This section may also be used to abate graffiti that is observable from a public road, public right-of-way, or other property that is freely open to the public, as defined in Section 49.84.2.

If at the time of removal of the graffiti the owner or occupants object, then the City will immediately obtain the necessary consent, warrants, or court order prior to completion of the graffiti removal. This section should not be administered in any way that would violate the constitutional rights of any person.

**8904.2 Abatement of vacant buildings or structures that are open to unauthorized entry and fire damaged or repeatedly used for illegal purposes.**

**8904.2.1.** Any vacant buildings open to unauthorized entry, which become fire damaged or used repeatedly by vagrants and gang members or for other illegal purposes, constitute a public nuisance. The expeditious repair or demolition of such vacant buildings and attached or detached appurtenances is essential in order to eliminate fire hazards, and public nuisance conditions which adversely affect the public safety and have a blighting effect on the neighborhood. It is the purpose of this section to establish a fair and expeditious procedure which may be used in connection with those buildings and attached or detached appurtenances.

**8904.2.2 Procedures.** The Department may declare a vacant building to be a public nuisance building under the following circumstances:

1. The vacant building has been secured pursuant to Section 8904.1;



2. It has subsequently become open to unauthorized entry; and
3. It has become fire damaged or is used repeatedly without the owner's permission by vagrants, criminals, or gangs or for other illegal purposes.

If the Department determines that a vacant building is a public nuisance building as defined in this section, then the Department may proceed to abate the public nuisance building utilizing the procedures set forth in Sections 8907.2, 8907.3 and 8907.4. The cost of any work done by the City or its contractor to abate the nuisance may be collected from the property owner in accordance with the procedures set forth in Section 8906.

A copy of any order issued pursuant to this section shall be provided to the Fire Department and Police Department.

**8904.3 Inspection fee for periodic inspection of property and buildings.** Whenever the Department determines after notice and hearing that a property or building requires a monthly inspection in order to abate a public nuisance and encourage future maintenance in compliance with applicable codes, the Department may inspect monthly and assess fees pursuant to LAMC Section 98.0412. These fees shall be imposed annually when the nuisance condition is abated by the City pursuant to this chapter but not more than once during any twelve month period.

The notice of hearing and intent to monthly inspect and impose the fees annually shall be mailed to the owner as listed on the last equalized assessment roll or supplemental roll. The matter shall be scheduled for hearing before the Board on the date specified on the notice. The Board shall determine whether the conditions previous record of public nuisance conditions and failure to comply with the Code justify the imposition of the fees and monthly inspection.

The monthly inspection may be accomplished by contract or work order and may be performed by a private contractor submitting a sealed bid or by means of an Annual Awarded Monitoring Contract. An Annual Awarded Monitoring Contract shall mean one or more 12-month contracts awarded by the Department after competitive bidding. Payment for the cost of monthly inspections shall be made from the Repair and Demolition Fund. Any payments received as a result of the fees imposed pursuant to this subsection shall be deposited into the Repair and Demolition Fund. The property owner's failure to pay this fee may result in a lien against the property pursuant to Section 8906.2.

#### **SECTION 8905 SPECIAL PROVISIONS FOR VACATING, BARRICADING, REMOVING OR DEMOLISHING BUILDINGS OR STRUCTURES WITHOUT NOTICE**

**8905.1.** Notwithstanding anything to the contrary, whenever the Department determines that any building, structure, premises or portion thereof falling within the scope of this Chapter is a present, imminent, extreme and immediate hazard or danger to life or limb, health or safety, so as to necessitate the immediate elimination thereof without prior notice to the

owner, the Department may, without an order or notice of any kind whatsoever and without a hearing, cause the building, structure or premises or any portion thereof to be immediately vacated, barricaded, removed or demolished by such means as the Department may deem advisable, including the use of the Department's annually awarded demolition contractor.

**8905.2.** Buildings or structures which are vacated pursuant to this section shall be locked and otherwise secured against ingress and the Department shall post thereon, in a conspicuous place near the entrance, a placard warning the building is unsafe.

Any warning placard posted pursuant to this section shall not be defaced, covered, removed, or hidden from view in any manner.

**8905.3.** The Department may cause the building, structure or premises or any portion of the building, structure or premises to be immediately barricaded, removed or demolished. The barricading, removal or demolition, including any monitoring or removal of asbestos, may be accomplished by any City department with the forces to perform the work, upon receipt of a request from the Department, or by any forces under contract to the City. Where the work is accomplished either by contract or City forces, the cost shall be paid from the "Repair and Demolition Fund" as established in Section 8906.

All costs incurred pursuant to this section shall be a personal obligation against the property owner upon which the particular building or structure or any portion is located, recoverable by the City in an action before any court of competent jurisdiction. These costs shall include an amount equal to 40 percent of the cost to perform the actual work, but not less than the sum of \$100.00, to cover the City's costs for administering any contract and supervising the work required. In addition to this personal obligation and all other remedies provided by law, the City may collect any judgment, fee, cost, or charge, including any permit fees, fines, late charges, or interest, incurred in relation to the provisions of this section as provided in *Los Angeles Administrative Code* Sections 7.35.1 through 7.35.8.

**8905.4.** The administrative fee of 40 percent of the costs shall not be included in the calculation of costs incurred for or arising out of any barricading, removal or demolition resulting from an event or course of events that prompted a declaration of a state of emergency, local emergency, war emergency or major disaster by the Mayor, the Governor of the State, or by the President of the United States.

#### **SECTION 8906 PAYMENT AND RECOVERY OF REPAIR AND DEMOLITION FUNDS**

**8906.1 Repair and demolition fund.**

**8906.1.1 Established by city council.** The City Council has set up a special revolving fund designated as the Repair and Demolition Fund. Payments shall be made out of said fund upon the demand of the Department to defray the costs and expenses which may be incurred by the Department in causing the necessary work of repair, secur-

**ABATEMENT OF BUILDINGS, STRUCTURES, PREMISES AND PORTIONS THEREOF  
WHICH CONSTITUTE A NUISANCE OR ARE HAZARDOUS, OR SUBSTANDARD**

ing, cleaning or demolition of buildings, structures and portions thereof or premises which fall within the scope of this Chapter.

**8906.1.2 Transfer of funds.** The City Council may at any time transfer to the Repair and demolition Fund, out of any money in the General Fund of the City, sums as it may deem necessary in order to ensure the performance of the work of repair, securing, cleaning or demolition, and the sums so transferred shall be deemed a loan to a special fund and shall be repaid out of the proceeds of the collection of costs provided for in this chapter. All funds collected under the proceedings provided for below, either upon voluntary payments or as the result of the involuntary sale of the property, shall be paid when collected to the City Treasurer, who shall place the funds in the Repair and Demolition Fund.

**8906.1.3 Maximum amount in fund.** At the close of each fiscal year, with the exception of money deposited from the Community Development Trust Fund in connection with the Rental Housing Rehabilitation Program, all monies in said repair and demolition fund in excess of \$250,000.00, over and above the amount of outstanding liabilities payable out of such fund, shall be transferred to the salary account of the Department for use in building conservation work.

**8906.2 Collection of repair and demolition costs.** Whenever the Department has caused the repair, securing, cleaning or demolition of any building, structure, or portion of a building, structure or any premises, all costs incurred under the provisions of this Chapter of this Code shall be a personal obligation against the property owner or responsible interested parties in charge or control of the property, recoverable by the City in an action before any court of competent jurisdiction. These costs shall include an amount equal to 40 percent of the cost to perform the actual work to cover the City's costs for administering any contract and supervising the work required. In addition to this personal obligation and all other remedies provided by law, the City may collect any judgment, fee, cost, or charge, including any permit fees, fines, late charges, or interest, incurred in relation to the provisions of this Section as provided in *Los Angeles Administrative Code* Sections 7.35.1 through 7.35.8.

**SECTION 8907  
ABATEMENT OF PUBLIC NUISANCE CONDITIONS  
RELATED TO A DECLARED LOCAL EMERGENCY**

**8907.1 Declaration of purpose.** Both the expeditious cleanup of the debris and the removal of irreparably damaged buildings resulting from declared local emergencies are essential in order to eliminate public nuisance conditions which may adversely affect the public health, safety and welfare. It is the purpose of this section to establish a fair and expeditious procedure which may be utilized in connection with declared local emergencies for the abatement of public nuisances, which includes hazardous buildings and debris.

Accordingly, the Department is hereby authorized to issue orders requiring property owners to abate public nuisances. The Department is also authorized to cause the demolition of

hazardous buildings and to remove the debris, rubbish or other dangerous or injurious materials; or to take other action as necessary to abate public nuisance conditions, and to cause the cost of the demolition, removal or abatement to become a special lien against the property.

The terms "nuisance" and "hazardous buildings" are defined in Section 8902. As used in this section, the term "debris" includes burned or partially burned building materials, members, or portions thereof, ash, damaged appliances, broken concrete, loose bricks, glass, metal and downed trees.

This procedure is in addition to any other procedure that is currently authorized for abatement of such public nuisances. Notwithstanding any provision of this section, the Department may at any time exercise its lawful authority to summarily and immediately abate public nuisances pursuant to Section 8905.

**8907.2 Notice.** Whenever the Department discovers the existence of a public nuisance, including debris and hazardous buildings, the Department may issue an order for the premises upon which the nuisance is discovered to the person listed as the owner of the premises, based on the last equalized assessment roll or supplemental roll. A copy of the order shall be posted in a conspicuous place on the parcel or premises, and a copy shall also be mailed to the person listed as the owner based on the last equalized assessment roll or supplemental roll. The failure of any owner or other person to receive such notice shall not affect in any manner the validity of any of the proceedings taken thereunder. Proof of giving any notice may be made by an affidavit of any employee of the City, which shows service in conformity with this section. The order shall indicate:

1. The street address, or the approximate street address if no street address has been assigned, of the property on which the nuisance exists;
2. That the condition on the premises as described in the order constitutes a public nuisance;
3. That the owner or owner's agent is required to obtain all necessary permits to abate the public nuisance within 10 days from the date of the order, and to commence and complete all necessary work within 30 days from the date of the order;
4. That the owner must appear at a hearing conducted by the Board, at a time, date and location specified in the order, which shall be at least 15 days from the date of the order;
5. That upon any such appearance the owner will be given the opportunity to present and to elicit testimony and other evidence to show cause why the alleged nuisance should not be abated by the owner or by the City using its own forces or through contract;
6. That such appearance may be made by the submission of written materials if they have been received by the City at least three days prior to the scheduled hearing at the mailing address specified in the order;
7. That if a public nuisance is found to exist on the property and the owner fails to abate that nuisance, then the Department has the authority to cause the demolition of hazardous buildings and removal of debris, rubbish or

other dangerous or injurious materials as necessary to abate public nuisance conditions;

8. That the cost of abatement of the public nuisance by the City may become a special lien against the premises.

**8907.3 Pre-abatement hearing.**

**8907.3.1.** The matter shall be scheduled for hearing before the Board on the date and time specified in the order. The Board shall proceed to determine whether the conditions existing on the premises constitute a public nuisance.

**8907.3.2.** The person notified to appear, or the actual owner of the parcel or premises in the event the person notified is not the owner, or any person representing the owner, who attends the hearing, shall be given an opportunity to present and to elicit testimony and any other evidence on whether a public nuisance exists, and to show cause why the alleged nuisance conditions should not be abated by the owner or by the City using its own forces or through contract. The Board shall proceed with the hearing whether or not such person is in attendance. Written material shall be considered by the Board if it is received three days prior to the scheduled hearing.

**8907.3.3.** At the conclusion of the hearing, the Board shall make a finding and determine whether the premises are a public nuisance, and how much additional time, if any, should be given to the owner for compliance with the Department's order. Once the Board has acted, it shall have no further jurisdiction over any matter relating to the abatement of the nuisance conditions on the premises. Any future determinations in this regard, including nuisance abatement actions or requests for extensions of time, shall be within the sole jurisdiction and discretion of the Superintendent of Building and not appealable to the Board.

**8907.3.4.** The owner and any other person who appeared at the scheduled hearing on behalf of the owner, either in person or by the submission of written material, shall be notified in writing of the determination of the Board.

**8907.4 Abatement.** If the Board finds that a public nuisance exists, and if the Department determines that permits were not obtained, or that the nuisance was not removed or otherwise abated by the dates specified in the order, then the City or its contractor may enter upon the premises to demolish hazardous buildings, monitor or remove asbestos, remove debris, rubbish or other dangerous or injurious materials, and take other action as necessary to abate the nuisance. The work may be accomplished by any City department with the forces to perform the work, upon receipt of a request from the Department, or by any forces under contract to the City. Further, if the work qualifies, then it may be done as part of the City-sponsored demolition and debris removal program approved in concept by the City Council on May 22, 1992.

Where the work is accomplished by other than City forces, the cost may be paid from the Repair and Demolition Fund as established in Section 8906. All costs incurred pursuant to this section shall be a personal obligation against the owner of the property upon which the nuisance is located, recoverable by the City in an action before any court of competent jurisdiction. These costs shall include an amount equal to 40

percent of the cost to perform the actual work, but not less than the sum of \$100.00, to cover the City's costs for administering any contract and supervising the work required, unless the work is necessitated by an event or course of events that prompts the declaration of a state of emergency, local emergency, war emergency or major disaster by the Mayor, the Governor of the State, or by the President of the United States. In addition to this personal obligation and all other remedies provided by law, the City may collect any judgment, fee, cost, or charge, including any permit fees, fines, late charges, or interest, incurred in relation to the provisions of this section as provided in *Los Angeles Administrative Code* Sections 7.35.1 through 7.35.8.

**SECTION 8908  
SPECIAL PROVISIONS FOR THE  
REPAIR OF WELDED STEEL MOMENT  
FRAME BUILDINGS LOCATED IN HIGH  
EARTHQUAKE DAMAGED AREAS**

**8908.1.** Welded steel moment frame buildings located in high earthquake damaged areas experienced damage in the beam to column moment connection as a result of the earthquake of January 17, 1994 and its aftershocks. Except as provided by this section, it is unlawful for any person, firm, or corporation to maintain a building with damaged welded moment connections. The purpose of this section is to provide a practicable method, in addition to any other remedy available by law, whereby earthquake damaged welded steel frame moment buildings may be repaired.

**8908.2.** If the Department determines that a commercial building is a welded steel moment frame building located in a high earthquake damaged area, then the Department may issue an order to the owner, as shown on the last equalized assessment roll, to repair all damaged welded connections.

Within 180 days of mailing of the order, the building owner shall submit an inspection report to the Department indicating the number of damaged welded connections and proposed repair procedures. This inspection report shall be prepared under the direction of a structural engineer licensed by the State of California and shall include the results of any ultrasonic tests or the results of other approved methods of testing of connections. The inspection report shall be approved when it is determined to be in keeping with general standards established by the Department. Permits shall be obtained and repairs to the damaged connections shall commence within 90 days of the Department's approval of the submitted report. Repairs shall be completed within two years of the date of the permit.

**8908.3.** For purposes of this section, the following areas are high earthquake damaged areas:

That area bounded by, Mulholland Drive, Beverly Glen Boulevard, Pico Boulevard, Overland Avenue, Venice Boulevard, Centinela Avenue, Montana Avenue, 26th Street, Sunset Boulevard, and Mandeville Canyon Road.

That area of the City which is North of Mulholland Drive, and bounded by Universal City, Burbank, Glendale, Los Angeles County, and Ventura County.

[illegible]

**8908.4.** If an owner fails to comply with an order issued pursuant to this section within the time set forth in the order or such additional time as may be granted by the Department, then the Department may secure compliance utilizing the procedures set forth in Section 8903. However, if the Department utilizes Section 8903, then the order described in Section 8903.1.1 shall indicate that the building is within the scope of Chapter 89 because of the owner's failure to comply with the requirements of this section. Further the time for compliance set forth in Section 8903.1.2 may be reduced to 10 days, and the order to vacate described in Section 8903.1.3 may be issued whenever the Department deems appropriate.

**8908.5.** Notwithstanding any other provisions of this Code to the contrary, the owner of any building, who fails to comply with an order issued pursuant to this section within the time limits established in this section, shall be guilty of a misdemeanor. Further, if the Department determines at any time that the building is a hazardous building or unsafe to occupy, then it may order that the building be vacated or that other corrective actions be taken.

## CHAPTER 91

# EARTHQUAKE HAZARD REDUCTION IN EXISTING TILT-UP CONCRETE WALL BUILDINGS

### SECTION 9101 PURPOSE

The purpose of this Chapter is to promote public safety and welfare by reducing the risk of death or injury that may result from the effects of earthquakes on tilt-up concrete wall buildings designed under the building codes in effect prior to January 1, 1976. Such buildings have been categorized, based on past earthquakes, as being potentially hazardous and prone to significant damage, including possible collapse, in a moderate to major earthquake.

The provisions of this Chapter are minimum standards for structural seismic resistance established primarily to reduce the risk of life loss or injury on both subject and adjacent properties and will not necessarily prevent loss of life or injury or prevent earthquake damage to an existing building which complies with these standards. The requirement for compliance with these standards does not preclude the utilization, at the building owner's option, of more extensive strengthening method that might further prevent or limit loss of life or injury or building damage. This Chapter shall not require existing electrical, plumbing, mechanical or fire-safety systems to be altered unless they constitute a hazard to life or property.

This Chapter provides systematic procedures and standards for identification and classification of tilt-up concrete wall building based on the current use of the building. Priorities, time periods, and standards are also established under which these buildings are required to be structurally analyzed and strengthened for seismic resistance. Where the analysis determines structural deficiencies, this Chapter requires the building to be strengthened or demolished.

### SECTION 9102 SCOPE

The provisions of this Chapter shall apply to all buildings designed under building codes in effect prior to January 1, 1976, which, on the effective date of this Chapter have tilt-up concrete walls as defined herein.

Buildings within the scope of the chapter may not be added to or structurally altered or remodeled without first complying with the provisions of this Chapter unless the building official determines that the alteration is minor in nature.

Seismic strengthening in place prior to the effective date of this ordinance shall be evaluated according to the provisions of this Chapter and modified to comply if deficient.

### SECTION 9103 DEFINITIONS

For purposes of this Chapter the applicable definitions in Sections 1602, 1902, 2302 and Section 11.2 of ASCE 7, and the following shall apply:

**COMMENCED CONSTRUCTION.** Construction pursuant to a valid building permit has progressed to the point that one of the called inspections as required by the Department has been made and the work for which the inspection has been called has been judged by the Department to be substantial and has been approved by the Department.

**DEPARTMENT.** The Department of Building and Safety.

**ESSENTIAL BUILDING.** For purposes of this chapter, any building housing a hospital or other medical facility having surgery or emergency treatment areas, fire or police stations, municipal government disaster operations, and communication centers.

**HISTORICAL BUILDING.** Any building designated or currently in the process of being designated as an historical building by an appropriate federal, state or city jurisdiction.

**TILT-UP CONCRETE WALL.** A form of precast concrete panel construction either cast in the horizontal position at the site and after curing, lifted and moved into place in a vertical position, or cast off-site in a fabricator's shop.

### SECTION 9104 RATING CLASSIFICATIONS

The rating classification as exhibited in Table No. 91-A is hereby established and each building within the scope of this chapter shall be placed in one rating classification by the Department. The total occupant load as determined by Section 1004.1 for the entire building plus the occupant load of any adjacent building, which interconnects with the subject building or uses the subject building for exiting purposes, shall be used to determine the rating classification.

### SECTION 9105 GENERAL REQUIREMENTS

The owner of each building within the scope of the chapter shall cause an investigation of the existing construction and a structural analysis to be made of the building by a civil or structural engineer or architect licensed by the State of California, and if the building does not meet the minimum standards specified in this Chapter, the owner shall cause it to be structurally altered to conform to such standards or cause the building to be demolished.

The owner of a building within the scope of this Chapter shall comply with the requirements set forth above by submitting to the Department for review within 275 days after the service of the order the following:

1. A structural analysis, subject to approval by the Department within the 275 day time period, which demonstrates that the building meets the minimum requirements of this chapter, or
2. A structural analysis and plans for the proposed structural alterations of the building necessary to comply with the minimum requirements of this Chapter, or
3. Plans for the demolition of building. After plans are submitted and approved by the Department, the owner shall obtain a building permit, commence and complete the required construction or demolition within the time limits set forth in Table No. 91-B. These time limits shall begin to run from the date the order is served in accordance with Sections 9106.1 and 9106.2 of this Code. Vacating a building shall not be deemed as complying with the requirements of this Chapter.

## SECTION 9106 ADMINISTRATION

**9106.1 Service of order.** When the Department determines that a building is within the scope of this Chapter, the owner shall comply with Section 9105 of this Code. If the owner does not comply, the Department shall issue an order as provided in Section 9106.2 to the owner of each building with the minimum time periods for service of such orders set forth in Table No. 91-C. The minimum time period for the service of such orders shall be measured from the effective date of this Chapter.

**9106.2 Contents of order.** The order shall be in writing and may be given either by personal delivery thereof to the owner or by deposit in the United States mail in a sealed envelope, postage prepaid, addressed to the owner as shown on the last equalized assessment roll. Service by mail shall be deemed to have been completed at the time of deposit in the post office. The failure of any owner to receive such notice shall not affect in any manner the validity of any of the proceedings taken thereunder. Proof of giving any notice may be made by an affidavit of any employee of the City which shows such service in conformity with this section. Board action, Department administrative action, other correspondence between the City and the building owner or building owner's representative, or other evidence of knowledge of notification shall also be deemed as proof of giving notice.

The order shall specify that the building has been determined by the Department to be within the scope of this Chapter and, therefore, is required to meet the minimum seismic standards of this Chapter. The order shall specify the rating classification of the building and shall be accompanied by a copy of Section 9105, which sets forth the owner's alternatives and time limits for compliance.

**9106.3 Appeal from order.** The owner of the building may appeal the Department's determination that the building is within the scope of this Chapter to the Board of Building and Safety Commissioners. Such appeal shall be filed with the Board within 60 days of the service date of the order described in Section 9106.2. Such appeal shall be made in writing upon appropriate forms provided therefor by the Department, and the grounds thereof shall be stated clearly and concisely. Each appeal shall be accompanied by a filing fee as set forth in Table No. 4-A of Division 4 of Article 8 of Chapter IX of the Los Angeles Municipal Code.

**9106.4 Recordation.** At the time that the Department serves the aforementioned order, the Department shall file with the Office of the County Recorder a certificate stating that the subject building is within the scope of this Chapter. The certificate shall also state that the owner thereof has been ordered to structurally analyze the building and to structurally alter or demolish it when the Department determines the building is not in compliance with this Chapter.

If the building is either demolished, found not to be within the scope of this chapter, or is structurally capable of resisting minimum seismic forces required by this chapter as a result of structural alterations or an analysis, the Department shall file with the Office of the County Recorder a certificate terminating the status of the subject building as being classified within the scope of this Chapter.

**9106.5 Enforcement.** If the owner of the subject building fails to comply with any order issued by the Department pursuant to this Chapter within any of the time limits set forth in Section 9105, or within any additional time limits as may have been granted by the Board, the Department may order that the building be vacated and subsequently ordered to be demolished in accordance with the provisions of Section 8903 of this Code. The Superintendent of Building shall have the authority to grant two one-year extensions in cases of extreme hardship.

## SECTION 9107 HISTORICAL BUILDINGS

Qualified historical buildings may utilize alternate building standards or deviations from this Chapter to preserve their original or restored architectural elements and features. See Section 8119 of this Code.

## SECTION 9108 ANALYSIS AND DESIGN

For the purpose of this section, "anchorage system(s)" shall mean all structural elements, which supports the wall in the lateral direction, including wall anchorage and continuity tie (cross-tie) connectors in subdiaphragms and main diaphragms for retrofit and repairs.

**9108.1 Wall panel anchorage.** Concrete walls shall be anchored to all floors and roofs which provide lateral sup-

port for the wall. The anchorage shall provide a positive direct connection between the wall and floor or roof construction capable of resisting a horizontal force equal to 30 percent of the tributary wall weight for all buildings, and 45 percent of the tributary wall weight for essential buildings, or a minimum force of 250 pounds per linear foot of wall, whichever is greater. The required anchorage shall be based on the tributary wall panel assuming simple supports at floors and roof.

**Exception:** Alternate design may be approved by the Superintendent when justified by well established principles of mechanics.

**9108.2 Special requirements for wall anchors and continuity ties.** The steel elements of the wall anchorage systems and continuity ties shall be designed by the allowable stress design method using a load factor of 1.7. The  $\frac{1}{3}$  stress increase permitted by Section 1605.3.1.1 shall not be permitted for materials using allowable stress design methods.

The strength design shall be per Section 17.2.3 of ACI 318-14, unless modified by CBC Section 1905.1.8.

Wall anchors shall be provided to resist out-of-plane forces, independent of existing shear anchors.

**Exception:** Existing cast-in-place shear anchors may be used as wall anchors if the tie element can be readily attached to the anchors and if the engineer or architect can establish tension values for the existing anchors through the use of approved as-built plans or testing, and through analysis showing that the bolts are capable of resisting the total shear load while being acted upon by the maximum tension force due to earthquake. Criteria for analysis and testing shall be determined by the Superintendent.

Expansion anchors are not allowed without special approval of the Superintendent. Attaching the edge of plywood sheathing to steel ledgers is not considered as complying with the positive anchoring requirements of the Code; and attaching the edge of steel decks to steel ledgers is not considered as providing the positive anchorage of this Code unless testing and/or analysis are performed, which establish shear values for the attachment perpendicular to the edge of the deck.

**9108.3 Development of anchor loads into the diaphragm.** Development of anchor loads into roof and floor diaphragms shall comply with Section 1616.3 of this Code and Section 12.11 of ASCE 7.

**Exception:** If continuously tied girders are present, then the maximum spacing of the continuity ties is the greater of the girder spacing or 24 feet (7315 mm).

In wood diaphragms, anchorage shall not be accomplished by use of toe nails or nails subject to withdrawal, nor shall wood ledgers, top plates or framing be used in cross-grain bending or cross-grain tension. The continuous ties required by Section 1616.3 and Section 12.11 of ASCE 7 shall be in addition to the diaphragm sheathing.

Lengths of development of anchor loads in wood diaphragms shall be based on existing field nailing of the sheathing unless existing edge nailing is positively identified on the original construction plans or at the site.

At reentrant corners, continuity collectors may be required for existing return walls not designed as shear walls, to develop into the diaphragm a force equal to the lesser of the rocking or shear capacity of the return wall, or the tributary shear, but not exceeding the capacity of the diaphragm. Shear anchors for the return wall shall be commensurate with the collector force. If a truss or beam, other than rafters or purlins, is supported by the return wall or by a column integral with the return wall, an independent secondary column, is required to support the roof or floor members whenever rocking or shear capacity of the return wall is governing.

Seismic deflection shall be determined at the return walls, and fins/canopies at entrances, to ensure deflection compatibility with the diaphragm, by either seismically isolating the element or attaching the element and integrating its load into the diaphragm.

**9108.4 Anchorage at pilasters.** Anchorage of pilasters shall be designed for the tributary wall anchoring load per Section 9108.1 of this Code, considering the wall as a two-way slab. The edge of the two-way slab shall be considered “fixed” when there is continuity at pilasters, and considered “pinned” at roof or floor levels. The pilasters or the walls immediately adjacent to the pilasters shall be anchored directly to the roof framing such that the existing vertical anchor bolts at the top of the pilasters are by-passed without causing tension or shear failure at the top of the pilasters.

**Exception:** If existing vertical anchor bolts at the top of the pilasters are used for the anchorage, then additional exterior confinement shall be provided.

The minimum anchorage at a floor or roof between the pilasters shall be that specified in Section 9108.1 of this Code.

**9108.5 Symmetry.** Symmetry of connectors in the anchorage system is required. Eccentricity may be allowed when it can be shown that all components of forces are positively resisted and justified by calculations or tests.

**9108.6 Minimum roof member size.** Wood members used to develop anchorage forces to the diaphragm must be at least 3x for new construction and replacement. All such members must be checked for gravity and earthquake as part of the wall anchorage system. For existing buildings, the member check shall be without the  $\frac{1}{3}$  stress increase per Section 9108.2.

**9108.7 Combination of anchor types.** To repair and retrofit existing buildings, a combination of different anchor types of different behavior or stiffness shall not be permitted. The capacity of the new and existing connectors cannot be added.

**9108.8 Prohibited anchors.** Usage of connectors that were bent and/or stretched from the intended use shall be prohibited.

**9108.9 Crack and damage repairs.** Evaluation of Existing Structural Alterations. The engineer shall report any observed structural conditions and structural damage that have imminent life safety effects on the buildings and recommend repairs. Evaluations and repairs shall be reviewed and approved by the Department. The engineer shall also evaluate the effects of alterations such as openings cut in existing wall panels without a permit, that may present immediate life safety hazard and correct when necessary.

**9108.10 Miscellaneous.** Existing mezzanines relying on the tilt-up walls for vertical and/or lateral support shall be anchored to the walls for the tributary mezzanine load. Walls depending on the mezzanine for lateral support shall be anchored per Sections 9108.1, 9108.2 and 9108.3.

**Exception:** Existing mezzanines that have independent lateral and vertical support need not be anchored to the walls.

Existing interior masonry or concrete walls not designed as shear walls, that extend to the floor above or to the roof diaphragm shall also be anchored for out-of-plane forces per Sections 9108.1, 9108.2 and 9108.3 of this Code. In the in-plane direction, the walls may be isolated or shall be developed into the diaphragm for a lateral force equal to the lesser of the rocking or shear capacity of the wall, or the tributary shear but not exceeding the diaphragm capacity.

## SECTION 9109 MATERIALS OF CONSTRUCTION

All materials permitted by this Code, including their appropriate allowable stresses and those existing configurations of materials specified in Chapter 88 of this Code, may be utilized to meet the requirements of this Chapter.

## SECTION 9110 INFORMATION REQUIRED ON PLANS

**9110.1 General.** In addition to the seismic analysis required elsewhere in this chapter, the licensed engineer or architect responsible for the seismic analysis of the building shall record the information required by this section on the approved plans.

**9110.2 Information required.** The plans shall accurately reflect the results of the engineering investigation and design and show all pertinent dimensions and sizes for plan review and construction. The following shall be provided:

1. Floor plans and roof plans shall show existing framing construction, diaphragm construction, proposed wall anchors, cross-ties and collectors. Existing nailing, anchors, ties and collectors shall also be shown on the plans if these are part of the

design, and these structural elements need to be verified in the field.

2. At elevations where there are alterations or damage, details shall show roof and floor heights, dimensions of openings, location and extent of existing damage, and proposed repair.
3. Typical wall panel sections with panel thickness, height, location of anchors shall be provided.
4. Details shall include existing and new anchors and the method of development of anchor forces into the diaphragm framing; existing and/or new cross-ties; existing and/or new or improved support of roof and floor girders at pilasters or walls.

**9110.3 Engineer's or architect's statement.** The responsible engineer or architect shall state on the approved plans, the following:

1. I am responsible for this building's seismic strengthening design in compliance with the minimum seismic resistance standards of Chapter 91 of the *Los Angeles Building Code*.

and when applicable:

2. The Registered Deputy Inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by Section 1704 of the *Los Angeles Building Code*.

## SECTION 9111 REQUIRED BUILDING MAINTENANCE

Every building within the scope of this Chapter which has been analyzed to demonstrate compliance or structurally altered to comply with the minimum earthquake standards in this Chapter shall be maintained in conformity with the requirements of this Chapter in effect at the time of such analysis or structural alteration.

## SECTION 9112 VIOLATIONS – PENALTIES FOR DISREGARDING DEPARTMENT ORDERS

Notwithstanding any other provisions of this Code to the contrary, it shall be unlawful for any person, firm or corporation to maintain, use or occupy any building within the scope of this Chapter which does not meet the minimum earthquake standards specified in this Chapter.

Any person who violates or causes or permits another person to violate this provision is guilty of a misdemeanor. Any person includes an owner, lessor, sublessor, manager, or person in control of a building subject to this Chapter. This term shall not include any person who is merely a tenant or other individual occupying any dwelling unit, efficiency dwelling unit, guest room or suite in a building. The legal owner of a building is that person, firm, corporation, partnership, or



other entity whose name or title appears on the record with the Los Angeles County Recorder's Office, as well as all successors or assignees of these persons.

**Exception:** This section shall not comply if alteration or repair work has commenced in order to bring the building into compliance with requirements of this Chapter, and such work is proceeding in accordance with the time limits set forth in any order of the department or determination of the board.

**TABLE 91-A  
RATING CLASSIFICATIONS**

CLASSIFICATION	OCCUPANT LOAD
Essential	N/A
Group I	300 or more
Group II	100 to 299
Group III	50 to 99
Group IV	Less than 50

**TABLE 91-B  
TIME LIMITS FOR COMPLIANCE**

OBTAIN BUILDING PERMIT WITHIN	COMMENCE CONSTRUCTION WITHIN	COMPLETE CONSTRUCTION WITHIN
365 days	545 days	3 years

**TABLE 91-C  
SERVICE PRIORITIES**

RATING CLASSIFICATION	MINIMUM TIME PERIOD BEFORE SERVICE OF ORDER
Group I & Essential (Highest Priority)	30 days
Group II	90 days
Group III	240 days
Group IV (Lowest Priority)	1 year



## CHAPTER 92

# VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING WOOD FRAME RESIDENTIAL BUILDINGS WITH WEAK CRIPPLE WALLS AND UNBOLTED SILL PLATES

### SECTION 9201 GENERAL

**9201.1 Purpose.** The provisions of this chapter are intended to promote public safety and welfare by reducing the risk of earthquake-induced damage to existing wood-framed residential buildings. The voluntary minimum standards contained in this chapter shall substantially improve the seismic performance of these residential buildings but will not necessarily prevent all earthquake damage. When fully followed, these standards will strengthen the portion of the structure that is most vulnerable to earthquake damage.

Prior to 1960, most wood frame residential buildings were built with raised wood floors supported by short wood stud walls known as cripple walls. These cripple walls are typically braced with weak seismic materials such as portland cement plaster or horizontal wood siding. In addition, wood frame buildings built under building codes in effect prior to July 1938 were not required to be bolted to their foundations. Recent earthquakes have shown that if a building has weak cripple walls or is unbolted, it may fall off its foundation even in moderate earthquakes. Fallen buildings have collapsed, caught fire or needed extensive repairs to restore occupancy.

This chapter sets prescriptive standards for strengthening of underfloor enclosures that shall be permitted by the Superintendent of Building without requiring plans or calculations prepared by an architect or an engineer. This chapter also provides a design standard for the use of alternate materials or an alternate method of construction in lieu of the prescriptive standards. Construction documents for strengthening using alternate materials or methods shall be prepared by an architect or engineer.

**9201.2 Scope.** The provisions of this Chapter may be applied to light wood frame Group R Occupancies with no more than four dwelling units when they contain one or more of the structural weaknesses specified in Section 9203.1.

The provisions of this Chapter do not apply to the buildings or building elements, listed below. These buildings or elements require analysis by an engineer or architect in accordance with Chapter 16 of this Code or other approved standards to determine appropriate strengthening.

1. Buildings with a lateral force resisting system using poles or columns embedded in the ground.
2. Cripple walls that exceed 4 feet (1219.2 mm) in height.
3. Buildings exceeding three stories in height and any three-story building with cripple wall studs exceeding 14 inches (355.6 mm) in height.
4. Buildings, or portions of buildings, constructed on a concrete slab on grade or constructed on or into a slope-steeper than 3 horizontal to 1 vertical.

5. Buildings where the Superintendent of Building determines that conditions exist that are beyond the scope of the requirements of this Chapter.

The standard details approved by the Superintendent of Building and these prescriptive provisions are not intended to be the only acceptable strengthening methods permitted. Alternate details and methods shall be permitted when approved by the Superintendent of Building. Qualified Historical Buildings shall be permitted to use alternate building regulations of Section 8119 in order to preserve their original or restored architectural elements and features.

**9201.3 Alternative design procedures.** When analysis by an engineer or architect is required or provided for a building within the scope of this Chapter, that analysis shall be in accordance with all requirements of this Code except as provided in this Chapter. The design shall provide strengthening for any structural weakness listed in Section 9203 that is at least equivalent to that provided by the prescriptive requirements of this Chapter with respect to strength, deflection, and capacity. The Superintendent of Building may require that sufficient evidence be submitted to substantiate that equivalence. The base shear may be determined in accordance with the following:

$$V = 0.1375W \quad \text{(Formula 92-1)}$$

where:

$V$  = The total design lateral force or shear at the base.

$W$  = The total seismic dead load defined in Section 12.7.2 of ASCE 7.

### SECTION 9202 DEFINITIONS

For the purpose of this Chapter, in addition to the applicable definitions, symbols and notations in this Code, certain additional terms are defined as follows:

**ADHESIVE ANCHOR.** A fastener placed in hardened concrete or masonry that derives its holding strength from a chemical adhesive compound placed between the wall of the hole and the embedded portion of the anchor.

**ANCHOR SIDE PLATE.** A metal plate or plates used to connect a sill plate to the side of a concrete or masonry stem wall.

**CRIPPLE WALL.** A wood-framed stud wall extending from the top of the foundation to the underside of the lowest floor framing.

**EXPANSION ANCHOR.** A mechanical fastener placed in hardened concrete or assembled masonry, designed to expand in a self-drilled or pre-drilled hole of a specified size and

engage the sides of the hole in one or more locations to develop shear and/or tension resistance to applied loads without grout, adhesive or drypack.

**PERIMETER FOUNDATION.** A foundation system which is located under the exterior walls of a building.

**SNUG-TIGHT.** As tight as an individual can torque a nut on a bolt by hand using a wrench with a 10-inch (254 mm) long handle and the point at which the full surface of the plate washer is contacting the wood member and slightly indents the wood surface.

**UNREINFORCED MASONRY.** Includes adobe, burned clay, concrete or sand- lime brick, hollow clay or concrete block, hollow clay tile, rubble, cut stone and unburned clay masonry walls in which the area of reinforcement is less than 50 percent of the minimum steel ratios required for reinforced masonry.

## **SECTION 9203 STRUCTURAL WEAKNESSES**

**9203.1 General.** For the purpose of this Chapter, structural weaknesses shall be as specified below.

1. Sill plates or floor framing which are supported directly on the ground without an approved foundation system.
2. A perimeter foundation system which is constructed of wood posts supported on isolated pad footings.
3. Perimeter foundation systems that are not continuous.

### **Exceptions:**

- A. Existing single-story exterior walls not exceeding 10 feet (3084 mm) in length forming an extension of floor area beyond the line of an existing continuous perimeter foundation.
  - B. Porches, storage rooms and similar spaces not containing fuel-burning appliances.
4. A perimeter foundation system which is constructed of unreinforced masonry.
  5. Sill plates which are not connected to the foundation or are connected with less than what is required by Section 9204.3.1.
  6. Cripple walls that are not braced in accordance with the requirements of Section 9204.4 and Table 92-A.

## **SECTION 9204 STRENGTHENING REQUIREMENTS**

**9204.1 General.**

**9204.1.1 Scope.** The structural weaknesses noted in Section 9203 shall be strengthened in accordance with the requirements of this section. Strengthening work shall be allowed to include both new construction and alteration of existing construction. Except as provided here, all strengthening work and materials shall comply with the applicable provisions of this Code. All prescribed nailing in this Chapter shall be common nails. Alternate methods of strengthening shall be allowed provided the systems are

designed by an engineer or architect and approved by the Superintendent of Building.

**9204.1.2 Condition of existing wood materials.** All existing wood materials which will be a part of the strengthening work shall be in a sound condition and free from defects which substantially reduce the capacity of the member. Any wood material found to contain fungus infection shall be removed and replaced with new material. Any wood material found to be infested with insects or to have been infested shall be strengthened or replaced with new materials to provide a net dimension of sound wood at least equal to its undamaged original dimension.

**9204.1.3 Floor joists not parallel to foundations.** Floor joists framed perpendicular or at an angle to perimeter foundations shall be restrained by either a nominal 2 inch (50.8 mm) wide continuous rim joist or a nominal 2 inch (50.8 mm) wide full depth blocking between alternate joists in one- and two-story buildings, and between each joist in three-story buildings. Blocking for multistory buildings must occur at each joist space above a braced cripple wall panel.

Existing connections at the top edge of an existing rim joist or blocking need not be verified. The bottom edge connection to either the foundation sill plate or top plate of a cripple wall shall be verified unless a supplemental connection is provided. The minimum existing bottom edge connection shall consist of 8d toe nails spaced 6 inches (152.4 mm) apart for a continuous rim joist or three 8d toe nails per block. When this minimum bottom edge connection is not present, or is not verified, a supplemental connection shall be provided.

When an existing continuous rim joist or the minimum existing blocking does not occur, new 1<sup>1</sup>/<sub>8</sub> inch (28.57 mm) wood structural panel blocking installed tightly between floor joists and nailed with 10d common nails at 4 inches (101.6 mm) on center to the sill or wall top plate shall be provided at the inside face of the cripple wall. In lieu of 1<sup>1</sup>/<sub>8</sub> inch (28.57 mm) wood structural panel blocking, tight fitting, full or near full depth 2 inches (50.8 mm) nominal width lumber blocking shall be allowed provided it does not split during installation. New blocking is not required where it will interfere with vents or plumbing which penetrates the wall.

**9204.1.4 Floor joists parallel to foundations.** Where existing floor joists are parallel to the perimeter foundations, the end joist shall be located over the foundation and, except for required ventilation openings, shall be continuous and in continuous contact with any existing foundation sill plate or top plate of the cripple wall. Existing connections at the top edge connection of the end joist need not be verified; however, the bottom edge connection to either the foundation sill plate or the top plate of a cripple wall shall be verified unless a supplemental connection is provided. The minimum bottom edge connection shall be 8d toe nails spaced 6 inches (152.4 mm) apart. If this minimum bottom edge connection is not present or is not verified, a supplemental connection shall be provided.

**9204.1.5 Supplemental connections.** Supplemental connections shall provide sufficient strength to transfer the seismic forces. Framing anchors of minimum 18 gauge steel and 12 approved fasteners may be considered to meet this requirement when spaced 32 inches (812.8 mm) on center for one story buildings, 24 inches (609.6 mm) on center for two story buildings and 16 inches (406.4 mm) on center for three story buildings.

**Exception:** A supplemental connection is not required when:

1. The structural wood panel sheathing extends from the sill plate to the rim joist or blocking above.
2. The floor sheathing is nailed directly into the sill or top plate of the cripple wall.

**9204.1.6 Single top plate ties.** When a single top plate exists in the cripple wall, all end joints in the top plate shall be tied. Ties shall be connected to each end of the discontinuous top plate and shall be equal to one of the following:

1. 3 inch by 6 inch (76.2 mm by 152.4 mm) by 0.036 inch thick (0.91 mm) galvanized steel and nailed with six 8d nails at each end.
2. 1½ inches (38.1 mm) by 12 inch (304.8 mm) by 0.058 inches (1.47 mm) galvanized steel nailed with six 16d nails at each end.
3. 2 inch by 4 inch by 12 inch (50.8 mm x 101.6 mm x 304.8 mm) wood blocking nailed with six 16d nails at each end.

## **9204.2 Foundations.**

**9204.2.1 New perimeter foundations.** New perimeter foundations shall be provided for structures with the structural weaknesses noted in Subdivisions 1 and 2 of Section 9203.1. Soil investigations or geotechnical studies are not required for this work unless the building shows signs of excessive settlement or creep.

**9204.2.2 Foundation evaluation by engineer or architect.** Partial perimeter foundations or unreinforced masonry foundations shall be evaluated by an engineer or architect for the force levels noted in Formula (92-1). Test reports or other substantiating data to determine existing foundation material strengths shall be submitted for review. When approved by the Superintendent of Building, these foundation systems may be strengthened in accordance with the recommendations included with the evaluation in lieu of being replaced.

**Exception:** In lieu of testing existing foundations to determine material strengths and when approved by the Superintendent of Building, a new nonperimeter foundation system, designed for the forces noted in Formula (92-1), may be used to resist all exterior wall lateral forces.

**9204.2.3 Details for new perimeter foundations.** All new perimeter foundations shall be continuous and constructed according to the standards for new buildings.

**Exceptions:**

1. When approved by the Superintendent of Building, the existing clearance between existing floor

joists or girders and existing grade below the floor need not comply with Section 2304.11.2.1. This exception shall not be permitted when buildings are relocated on new foundations.

2. When approved by the Superintendent of Building, and when designed by an engineer or architect, partial perimeter foundations may be used in lieu of a continuous perimeter foundation.

## **9204.3 Foundation sill plate anchorage.**

**9204.3.1 Existing perimeter foundations.** When the building has an existing continuous perimeter foundation, all perimeter wall sill plates shall be connected to the foundation in accordance with Table 92-A and this section.

Anchors shall be installed with the plate washer installed between the nut and the sill plate. The nut shall be tightened to a snug-tight condition after curing is complete for adhesive anchors and after expansion wedge engagement for expansion anchors. The installation of nuts on all anchors shall be subject to verification by the Superintendent of Building. Torque testing shall be performed for 25 percent of all adhesive or expansion anchors. Minimum test values shall be 30 foot pounds (41 N-m) for ½-inch (12.7 mm) and 40 foot pounds (55 N-m) for ⅝-inch (15.9 mm) diameter anchors.

Anchor side plates shall be permitted when conditions prevent anchor installation vertically through the sill plate. Anchor side plates shall be spaced as required for adhesive or expansion anchors but only one anchor side plate is required on individual pieces of sill plate less than 32 inches (812.8 mm) in length. Wood structural panel shims shall be used on sill plates for single plate anchor side plates when the foundation stem wall is from ⅜ inch (4.8 mm) to ¾ inch (19.05 mm) wider than the sill plate. The shim length shall extend a minimum of 2 inches (50.8 mm) past each end of the anchor side plate. Two plate anchor side plates shall be used when the total thickness of the required shim exceeds ¾ inch (19.05 mm).

All anchor side plates, which use lag or wood screws shall pre-drill the sill plate to prevent splitting as required by Section 2304.9. Lag or wood screws shall be installed in the center of the thickness of the existing sill plate.

Expansion anchors shall not be used in unreinforced masonry or concrete or masonry grout of poor quality. Adhesive anchors shall be required when expansion anchors will not tighten to the required torque or their installation causes surface cracking of the foundation wall.

**9204.3.2 Placement of anchors.** Anchors shall be placed within 12 inches (304.8 mm), but not less than 9 inches (228.6 mm), from the ends of sill plates and shall be placed near the center of the stud space closest to the required spacing. New sill plates may be installed in pieces when necessary because of existing conditions. The minimum length of new sill plate pieces shall be 30 inches (762 mm).

**Exception:** Where physical obstructions such as fireplaces, plumbing or heating ducts interfere with the

placement of an anchor, the anchor shall be placed as close to the obstruction as possible, but not less than 9 inches (228.6 mm) from the end of the plate. Center-to-center spacing of the anchors shall be reduced as necessary to provide the minimum total number of anchors required based on the full length of the wall. Center-to-center spacing shall not be less than 12 inches (304.8 mm).

**9204.3.3 New perimeter foundations.** Sill plates for new perimeter foundations shall be anchored as required by Chapter 19.

**9204.4 Cripple wall bracing.**

**9204.4.1 General.** Exterior cripple walls, not exceeding 4 feet (1219.2 mm) in height shall use the prescriptive bracing method listed below. Cripple walls more than 4 feet (1219.2 mm) in height require analysis by an engineer or architect in accordance with Chapter 16.

**9204.4.1.1. Sheathing Requirements.** Wood structural panel sheathing shall not be less than  $\frac{15}{32}$  inch (12 mm) thick. When used, plywood panels shall be constructed of five or more plies. All wood structural panels shall be nailed with 8d common nails spaced 4 inches (101.6 mm) on center at all edges and at 12 inches (304.6 mm) on center at each intermediate support with not less than two nails for each stud. Nails shall be driven so that their head or crown is flush with the surface of the sheathing and shall penetrate the supporting member a minimum of  $1\frac{1}{2}$  inch (38.1 mm). When a nail fractures the surface, it shall be left in place and not counted as part of the required nailing. A new 8d nail shall be located within 2 inches (50.8 mm) of the discounted nail and hand driven flush with the sheathing surface.

**Exception:** No. 6  $\times$   $1\frac{1}{2}$  inch (152.4 mm  $\times$  38.1 mm) wood screws may be used for sheathing nailing when bracing materials are installed on the interior face of studs and cement plaster or other brittle finishes are on the exterior of the sheathed wall.

All horizontal joints must occur over nominal 2 inch by 4 inch (50.8 mm by 101.6 mm) blocking installed with the nominal 4 inch (101.6 mm) dimension against the face of the plywood. All vertical joints must occur over studs. Vertical joints at adjoining pieces of wood structural panels shall be centered on existing studs such that there is a minimum  $\frac{1}{8}$  inch (3.17 mm) between the panels. Nails shall be placed a minimum of  $\frac{1}{2}$  inch (12.7 mm) from the edges of the existing stud. When such edge distance cannot be maintained because of the width of the existing stud, a new stud shall be added adjacent to the existing and connected with 16d common nails at 8 inches (203.2 mm) on center. A minimum of three such nails shall be provided.

**9204.4.2 Distribution and amount of bracing.** See Table 92-A for the distribution and amount of bracing required. Bracing for a building with three or more floor levels above cripple wall studs exceeding 14 inches (355.6 mm)

in height must be designed in accordance with Chapter 16 of this Code.

The braced panel must be at least 2 times the height of the cripple stud wall but not less than 48 inches (1219.2 mm) in width. All panels along a wall shall be nearly equal in length and shall be nearly equally spaced along the length of the wall. Braced panels at ends of walls shall be located as near the end as possible.

Where physical obstructions such as fireplaces, plumbing or heating ducts interfere with the placement of cripple wall bracing, the bracing shall then be placed as close to the obstruction as possible. The total amount of bracing required shall not be reduced because of obstructions but the required length of bracing need not exceed the length of the wall.

Underfloor ventilation openings shall be maintained in accordance Section 1203. Braced panels may include underfloor ventilation openings when the height of the solid portion of the panel meets or 75 percent of the height of the cripple stud wall. When the minimum amount of bracing prescribed in Table 92-A cannot be installed due to obstructions along any wall, the bracing must be designed by an architect or engineer in accordance with Section 1203.3.

**9204.4.3 Stud space ventilation.** When bracing materials are installed on the interior face of studs forming an enclosed space between the new bracing and existing exterior finish, each braced stud space must be ventilated. Adequate ventilation and access for future inspection shall be provided by drilling on 2 inch to 3 inch (50.8 mm to 76.2 mm) diameter round hole through the sheathing nearly centered between each stud at the top and bottom of the cripple wall. Such holes should be spaced a minimum of 1 inch (25.4 mm) clear from the sill or top plates. In stud spaces containing sill bolts, the hole shall be located on the center line of the sill bolt but not closer than 1 inch (25.4 mm) clear from the nailing edge of the sheathing.

When existing blocking occurs within the stud space, additional ventilation holes shall be placed above and below the blocking or the existing block shall be removed and a new nominal 2 inch (50.8 mm) by 4 inch (101.6 mm) block installed with the nominal 4 inch (101.6 mm) dimension against the face of the plywood. For stud heights less than 18 inches (457.2 mm) only one ventilation hole need be provided.

**9204.4.4 Existing underfloor ventilation.** Existing underfloor ventilation shall not be reduced without providing equivalent new ventilation as close to the existing as possible. New sheathing may be installed around existing vent openings in braced panels when the length of the panel is increased a distance equal to the length of the vent opening or one stud space minimum.

**Exception:** For residential buildings with a post and pier foundation system where a new continuous perimeter foundation system is being installed, ventilation shall be provided in accordance with this Code.

## SECTION 9205 QUALITY CONTROL

**9205.1 Inspection by the department.** All work shall be subject to inspection by the Superintendent of Building including, but not limited to:

1. Placement and installation of new adhesive or expansion anchors or anchor side plates installed in existing foundations.
2. Placement of required blocking and framing anchors.
3. Installation and nailing of new cripple wall bracing.

The torque testing of sill plate anchors per Section 9204.3.1 shall be performed by the building inspector.

**9205.2 Special inspection.** Special inspection is not required for sill plate anchors installed in existing foundations regulated by the provisions of this chapter. Any work may be subject to special inspection when required by the Superintendent of Building or when so designated by the architect or engineer of record.

**9205.3 Structural observation.** Structural observation is not required for work done under the prescriptive provisions of this Chapter. When construction documents for strengthening are prepared by an architect or engineer and alternate materials or methods are used, structural observation shall be provided as required in Section 1709.

**9205.4 Engineer's or architect's statement.** When an alternative design is provided per Section 9201.3, the responsible engineer or architect shall place the following statement on the approved plans:

1. "I am responsible for this building's seismic strengthening design for the underfloor cripple walls and sill bolting in compliance with the minimum seismic resistance standards of Chapter 92 of the LABC" or when applicable:
2. "The Registered Deputy Inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by LAMC Subsection 1704.11."

**TABLE 92-A  
SILL PLATE ANCHORAGE AND CRIPPLE WALL BRACING<sup>1,2,3</sup>**

NUMBER OF STORIES ABOVE CRIPPLE WALLS	MINIMUM SILL PLATE CONNECTION AND MAXIMUM SPACING	AMOUNT OF WALL BRACING
One Story	Adhesive or expansion anchors shall be $\frac{1}{2}$ -inch (12.7 mm) minimum diameter spaced at six feet (1829 mm) maximum center to center.	Each end and not less than 50% of the wall length.
Two Story	Adhesive or expansion anchors shall be $\frac{1}{2}$ -inch (12.7 mm) minimum diameter spaced at four feet (1219 mm) maximum center to center; or $\frac{5}{8}$ inch (15.9 mm) spaced at six feet maximum center to center.	Each end and not less than 70% of the wall length.
Three Story	Adhesive or expansion anchors shall be $\frac{1}{2}$ -inch minimum (12.7 mm) diameter spaced at two feet eight inches (813 mm) maximum center to center; or $\frac{5}{8}$ -inch minimum (15.9 mm) diameter spaced at four feet (1219 mm) maximum center to center.	100% of the wall length.

1. Plate washers for use with adhesive or expansion anchors shall be 2-inch (51 mm) by 2-inch (51 mm) by  $\frac{3}{16}$ -inch (4.8 mm) for  $\frac{1}{2}$ -inch (12.7 mm) diameter anchors and  $2\frac{1}{2}$ -inch (64 mm) by  $2\frac{1}{2}$ -inch (64 mm) by  $\frac{1}{4}$ -inch (6 mm) for  $\frac{5}{8}$ -inch (15.9 mm) diameter anchors.
2. Existing sill plate anchor bolts shall be permitted to provide all or a portion of the sill plate connection requirement if:
  - a. the anchor bolt is cast in concrete and in sound condition.
  - b. the diameter size and maximum spacing meets or exceeds the requirements of Table 92-A.
  - c. a new plate washer conforming to note 1 is installed.
  - d. the sill plate is connected to a snug tight condition and torque tested per Section 9204.3.1.
3. Anchor side plates shall be permitted when conditions prevent anchor installation vertically through the sill plate.





## CHAPTER 93

# MANDATORY EARTHQUAKE HAZARD REDUCTION IN EXISTING WOOD-FRAME BUILDINGS WITH SOFT, WEAK OR OPEN-FRONT WALLS

### SECTION 9301 PURPOSE

The purpose of this Chapter is to promote public welfare and safety by reducing the risk of death or injury that may result from the effects of earthquakes on existing wood-frame multi-story buildings with soft, weak or open front walls. In the Northridge Earthquake, many multi-story wood-frame buildings with tuck-under parking performed poorly and collapsed, causing the loss of human life, personal injury and property damage. It has been determined that the structural vulnerability of this building type is typically due to soft, weak or open front walls. This chapter creates minimum standards to mitigate hazards from these deficiencies. Adherence to these minimum standards will improve the performance of these buildings during earthquakes and reduce, but not necessarily prevent, the loss of life, injury or earthquake-related damage.

### SECTION 9302 SCOPE

The provisions of this Chapter shall apply to all existing buildings of wood-frame construction, or wood-frame portions thereof, where:

1. A permit for construction of a new building was applied for before January 1, 1978, or, if no permit can be located, the structure is determined by the Department to have been built under building code standards enacted before January 1, 1978; and
2. The ground floor portion of the structure contains parking or other similar open floor space that causes soft, weak or open-front wall lines, and there exists one or more stories above.

**Exceptions:** This Chapter shall not apply to any building containing three dwelling units or less if the building is used solely for residential purposes. Moreover, notwithstanding any provision of this Code, compliance with this chapter shall not require existing electrical, plumbing, mechanical or fire-safety systems to be altered to comply with existing code unless they constitute a hazard to life or property.

### SECTION 9303 DEFINITIONS

The following words and phrases, whenever used in this Chapter, shall be construed as defined in this section. Words

and phrases not defined here shall be construed as defined in Chapter 2 of this Code.

**CRIPPLE WALL.** A wood-framed stud wall extending from the top of the foundation wall to the underside of the lowest floor framing.

**DWELLING UNIT.** shall include any individual residential unit within either an R-1 or R-2 occupancy building, including a mixed-occupancy building when part of it is either an R-1 or R-2 occupancy. A dwelling unit shall include the area of a building that is occupied as a dwelling unit, whether the building is approved or unapproved for residential use.

**GROUND FLOOR.** is any floor within the wood-frame portion of a building whose elevation is immediately accessible from an adjacent grade by vehicles or pedestrians. The ground floor portion of the structure does not include any floor that is completely below adjacent grades.

**OPEN-FRONT WALL LINE.** is an exterior wall line, without vertical elements of the lateral force-resisting system, which requires tributary seismic forces to be resisted by diaphragm rotation or excessive cantilever beyond parallel lines of shear walls. Diaphragms that cantilever more than 25 percent of the distance between lines of lateral force resisting elements from which the diaphragm cantilevers shall be considered excessive. Exterior exit balconies of six feet or less in width shall not be considered excessive cantilevers.

**QUALIFIED HISTORICAL BUILDING.** is any building designated or currently in the process of being designated as a "qualified historical building" as defined in Part 8, Title 24 of the California Code of Regulations.

**RETROFIT.** is an improvement of the lateral force-resisting system by alteration of existing structural elements or addition of new structural elements.

**SOFT WALL LINE.** is a wall line, the lateral stiffness of which is less than what is required by story drift limitations or deformation compatibility requirements of this chapter. In lieu of the engineering analysis required by this chapter to determine whether a wall line's lateral stiffness is less than the aforementioned story drift limitations or deformation compatibility requirements, a soft wall line may be defined as a wall line in a story where the wall stiffness is less than 70 percent of the stiffness of the exterior wall above for the direction under consideration.

**STORY.** is as defined in this Code, but includes any basement or underfloor space of a building with cripple walls exceeding four feet in height.

**STORY STRENGTH.** is the total strength of all seismic-resisting elements sharing the same story shear in the direction under consideration.

**WALL LINE.** is any length of a wall along a principal axis of the building used to provide resistance to lateral loads.

**WEAK WALL LINE.** is a wall line at the ground floor where the wall strength is less than 80 percent of the strength of the wall above in the direction under consideration.

### SECTION 9304 PRIORITY DESIGNATIONS

The Department shall prioritize its enforcement of this chapter as follows:

1. **Priority I.** Buildings containing 16 or more dwelling units.
2. **Priority II.** Buildings with three stories or more, containing fewer than 16 dwelling units.
3. **Priority III.** Buildings not falling within the definition of Priority I or II.

### SECTION 9305 COMPLIANCE REQUIREMENTS

**9305.1 General.** The owner of each building within the scope of this Chapter shall cause a structural analysis to be made of the building by a civil or structural engineer or architect licensed by the state of California, and if the building does not meet the minimum earthquake standards specified in this Chapter, the owner shall cause the building to be structurally altered to conform to such standards or, at the owner's option, cause it to be demolished within the time limits stated in Section 9305.2.

**9305.2 Time limits for compliance.** The owner of a building within the scope of this Chapter shall comply with its requirements within the following time limits:

1. Within two (2) years after service of the order described in Section 9306, submit to the Department for review and approval:
  - a. A structural analysis and plans which shall demonstrate the building, as is, meets or exceeds the requirements set forth in Section 9309; or
  - b. A structural analysis and plans which shall demonstrate that the proposed structural alteration of the building meets or exceeds the requirements set forth in Section 9309; or
  - c. Plans for the demolition of the building.
2. Within three and a half (3.5) years after service of the order, obtain all necessary permits for rehabilitation or demolition.
3. Within seven (7) years after service of the order, complete construction or demolition work under all necessary permits.

Time limits for compliance shall be based on the service date of the original order from the Department. Transfer of title shall not change compliance dates.

### SECTION 9306 ADMINISTRATION

**9306.1 Issuance of order.** When the Department determines that a building is within the scope of this Chapter, the Department shall issue an order as described in Section 9306.4 to the owner of the building.

**9306.2 Service of order.** The Department shall serve the order in writing, either personally or by certified or registered mail, upon the owner as shown on the last equalized assessment roll. Service by mail shall be deemed complete at the time of deposit in the post office. Proof of giving notice may be made by an affidavit of an employee of the City that shows service in conformity with this Chapter.

**9306.3 Failure to receive order.** Failure of the owner to receive an order shall not relieve the owner of any obligation to comply with this Chapter.

**9306.4 Contents of order.** The order shall specify that the building has been determined by the Department to be within the scope of this Chapter and, therefore, is required to meet the minimum seismic standards described in Section 9309. The order shall specify the priority designation of the building and shall be accompanied by a copy of Section 9305, which sets forth the owner's alternatives and time limits for compliance.

**9306.5 Appeal from order.** The owner of any building subject to this Chapter may appeal the Department's initial determination that the building is within the scope of this Chapter to the Board of Building and Safety Commissioners. Such appeal shall be filed with the Board within 60 days from the service date of the order. Any such appeal shall be decided by the Board no later than 60 days after the date that the appeal is filed. Such appeal shall be made in writing upon appropriate forms provided by the Department, and the grounds of the appeal shall be stated clearly and concisely. Each appeal shall be accompanied by a filing fee as set forth in Table No. 4-A of Chapter 4 of this Code.

Requests for slight modifications from any other determinations, orders or actions by the Department pursuant to this Chapter shall be made in accordance with the procedures established in Section 98.0403.2 of this Code.

**9306.6 Recordation.** At the time that the Department serves the order described in this section, the Department shall file with the Office of the County Recorder a certificate stating that the subject building has been determined to be within the scope of this Chapter, and that it has been ordered to be structurally analyzed and structurally altered or demolished (if the owner so decides), pursuant to Section 9305.2, if the Department determines that it does not conform to the minimum design standards of this Chapter.

The Department shall file with the Office of the County Recorder a certificate terminating the above recorded status of the subject building if the building is thereafter demolished by owner pursuant to Section 9305.2, found not to be within the scope of this chapter, or is determined to be structurally capable of resisting minimum seismic forces as a result of structural alterations or analysis required by this chapter.

## SECTION 9307 OCCUPANT AND TENANT ADVISORY

**9307.1 Notification to tenants and occupants.** When the Department determines that a building falls within the scope of this Chapter, the owner shall advise all current and prospective residential and non-residential tenants, subtenants, lessees, sublessees, or any other person(s) entitled to the use and/or occupancy of the building of such determination. With respect to current and prospective residential tenants, subtenants, lessees, sublessees, or other person(s) entitled to the use and/or occupancy of the building, the property owner shall advise such persons of the Department's determination in a method and written format approved and promulgated by the Los Angeles Housing and Community Investment Department. With respect to current and prospective non-residential tenants, subtenants, lessees, sublessees, or other person(s) entitled to the use and/or occupancy of the building, the owner shall advise such persons of the Department's determination in a method and written format approved and promulgated by the Department.

**9307.2 Tenant habitability plan.** If required by the Rent Stabilization Ordinance, the property owner shall be required to submit to the Los Angeles Housing and Community Investment Department a Tenant Habitability Plan pursuant to Article 2, Chapter XV of the *Los Angeles Municipal Code* (L.A.M.C. Section 152.03B.). If, upon review of the Tenant Habitability Plan, it is determined by the Los Angeles Housing and Community Investment Department that work required under this chapter affects the tenantability of any building or residential unit as defined in *California Civil Code* Section 1941.1, the owner shall be required to pay relocation benefits pursuant to Article 1, Chapter XV of the *Los Angeles Municipal Code* (L.A.M.C. Section 151.09 G.) to any tenant, subtenant, lessee, sublessee, or other person(s) entitled to the use and/or occupancy of the building that is affected by the untenable conditions or displaced from the residential unit. However, the mere undertaking and completion of work performed by the owner pursuant to this chapter shall not, in and of itself, result in any building or residential unit being deemed untenable or uninhabitable as defined in *California Civil Code* Section 1941.1.

## SECTION 9308 HISTORICAL BUILDINGS

Qualified historical buildings shall comply with requirements of the *California Historical Building Code* established under Part 8, Title 24 of the *California Code of Regulations*.

## SECTION 9309 ENGINEERING ANALYSIS

**9309.1. Scope of analysis.** This Chapter requires the alteration, repair, replacement or addition of structural elements and their connections to meet the strength and stiffness in conformance with this Code except as modified herein. The lateral-load-path analysis shall include the resisting elements and connections from the wood diaphragm immediately above any soft, weak or open wall lines to the foundation.

Stories above the weak wall line shall be considered in the analysis but need not be modified.

**9309.2 Design base shear and design parameters.** The design force in a given direction shall be 75 percent of the design base shear specified in the seismic provision of ASCE 7. The value of response modification coefficient, *R*, need not be less than 3.5, provided the strengthening systems are not cantilevered column systems and the strengthened structure will not have vertical structural irregularities of either type 1a, 1b, 5a or 5b listed in ASCE 7, "Vertical Structural Irregularities" Table.

**9309.3 Lateral vertical systems.** Strengthening systems with concrete walls or masonry walls, or steel braced frames shall not be permitted.

**9309.4 Horizontal structural irregularities in buildings with three or more stories.** Structures with three or more stories having horizontal structural irregularities of either type 2, 3, 4, or 5 listed in ASCE 7, "Horizontal Structural Irregularities" Table, shall be altered to meet the additional requirements of those sections referenced in the table for the entire story with weak or open wall lines.

**9309.5 Alternate analysis, base shear and design parameters.** Pursuant to Section 104.2.6, the Department may approve alternate design methodologies that improve the whole first story seismic performance that are at least equivalent to those prescribed by this chapter and that achieve the life safety objectives established by this Chapter.

**9309.6 Additional anchorage requirements for buildings on hillsides.** Where any portion of a building within the scope of this Chapter is constructed on or into a slope steeper than one unit vertical in three units horizontal (33 percent slope), the lateral-force-resisting system, at and below the base level diaphragm, shall also be analyzed for the effects of concentrated lateral loads caused at the building base from the hillside conditions and comply with the provisions of Chapter 94 of this Code.

**9309.7 Story drift limitations.** The calculated story drift for each retrofitted story shall not exceed the allowable deformation compatible with all vertical load-resisting elements and 0.025 times the story height. The calculated story drift shall not be reduced by the effects of horizontal diaphragm stiffness, but shall be increased when these effects produce rotation. Drift calculations shall be in accordance with ASCE 7 requirements.

**9309.8 Pole structures.** The effects of rotation and soil stiffness shall be included in the calculated story drift where lateral loads are resisted by vertical elements whose required depth of embedment is determined by pole formulas. The coefficient of subgrade reaction used in deflection calculations shall be based on an approved geotechnical investigation conducted in accordance with approved geotechnical engineering reports.

**9309.9 P-delta effect.** The requirements of the *Los Angeles Building Code* shall apply, except as modified herein. All structural framing elements and their connections not required by the design to be part of the lateral force resisting system shall be designed and detailed to be adequate to main-

tain support of design dead plus live loads when subject to the expected deformations caused by seismic forces. The stress analysis of cantilever columns shall use an effective length factor of 2.1 for the direction normal to the axis of the beam.

**9309.10 Ties, continuity and collectors.** All parts of the structure included in the scope of analysis shall be interconnected and the connection shall be capable of resisting the seismic force created by the parts being connected as required per the *Los Angeles Building Code*.

## SECTION 9310 INFORMATION REQUIRED ON PLANS

**9310.1 General.** For existing and new construction, the plans and specifications shall be of sufficient clarity to indicate the nature, design methodology, and extent of the proposed work and to show in detail that it will conform to the provisions of this Chapter and the *Los Angeles Building Code*.

**9310.2 Engineer's or architect's statement.** The responsible engineer or architect shall provide the following statements on the approved plans:

1. I am responsible for designing this building's seismic strengthening in compliance with the minimum standards of the Mandatory Earthquake Hazard Reduction in Existing Wood-Frame Buildings with Soft, Weak or Open-Front Walls (Ordinance No. \_\_\_\_\_)."

## SECTION 9311 VIOLATION/PENALTY

Notwithstanding any other provision of this Code to the contrary, it shall be unlawful for any person, firm or corporation to maintain, use or occupy any building within the scope of this chapter that fails to meet the minimum earthquake standards specified in this Chapter after receiving an order described in Section 9306.

Any person who violates or causes or permits another person to violate this chapter is guilty of a misdemeanor, and shall be subject to prosecution and/or administrative enforcement under the *Los Angeles Municipal Code*. For purposes of this paragraph, "any person" includes an owner, lessor, sublessor, manager or person in control of a building subject to this chapter. This term shall not include any person who is merely a tenant or other individual occupying any dwelling unit, efficiency dwelling unit, guest room or suite in a building. The legal owner of a building is that person, firm, corporation, partnership or other entity whose name or title appears on the record with the Office of the County Recorder, as well as all successors or assignees of these persons.

**Exception:** This section shall not apply to any building on which work is proceeding in compliance with the time limits set forth in this Chapter, or in compliance with any extensions of time granted by the Department or the Board; or any action, order or determination made by the Department or the Board in the implementation of this Chapter.

## SECTION 9312 SEVERABILITY

If any subsection, sentence, clause or phrase of this article is for any reason held to be invalid or unconstitutional by a court of competent jurisdiction or by reason of any preemptive legislation, such decision or legislation shall not affect the validity of the remaining portions of this ordinance. The City Council hereby declares that it would have adopted this section, and each and every subsection, sentence, clause and phrase thereof not declared invalid or unconstitutional, without regard to whether any portion of the ordinance would be subsequently declared invalid or unconstitutional.

## CHAPTER 94

# VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING HILLSIDE BUILDINGS

### SECTION 9401 PURPOSE

The purpose of this Chapter is to promote public safety and welfare by reducing the risk of death or injury that may result from the effects of earthquakes on existing hillside buildings constructed on or into slopes in excess of 1 unit vertical in 3 units horizontal (33.3 percent slope).

Such buildings have been recognized as life hazardous as a result of partial or complete collapse that occurred during the Northridge Earthquake.

The provisions of this Chapter are minimum standards for structural systems established primarily to reduce the risk of loss of life or injury resulting from earthquakes and will not necessarily prevent loss of life or injury or prevent earthquake damage to an existing building which complies with these standards.

This Chapter provides voluntary retrofit standards under which buildings shall be permitted to be structurally analyzed and retrofitted. When fully followed, these standards will strengthen the portion of the structure that is most vulnerable to earthquake damage.

### SECTION 9402 SCOPE

The provisions of this Chapter may be applied to all existing hillside buildings designed under building codes effective prior to June 19, 1995. If only a portion of the building is supported on or into the slope, these regulations may be applied to the entire building.

Seismic retrofit work as described in this Chapter may be applied to the portion of the structure defined as the base-level-diaphragm and below. Non-habitable accessory buildings, decks not supporting the main building, and existing conditions above the base-level-diaphragm are exempt from these regulations.

Seismic strengthening constructed prior to the effective date of the ordinance may be evaluated in accordance with the provisions of this Chapter.

### SECTION 9403 DEFINITIONS

For the purpose of this Chapter, in addition to the applicable definitions, symbols and notations in this Code, certain additional terms are defined as follows:

**BASE (BASE LEVEL).** The level at which the earthquake motions are considered to be imparted to the structure or the

level at which the structure as a dynamic vibrator is supported.

**BASE-LEVEL-DIAPHRAGM.** The floor at, or closest to, the top of the highest level of the foundation.

**DIAPHRAGM ANCHORS.** Assemblies that connect a diaphragm to the adjacent foundation at the uphill diaphragm edge.

**DIAPHRAGM BACKSPAN.** The horizontal cantilevered distance parallel to the direction of the lateral force, between the outermost vertical lateral force resisting elements and the edge of the diaphragm.

**DOWNHILL-DIRECTION.** The descending direction of the slope approximately perpendicular to the slope approximately perpendicular to the slope contours.

**FOUNDATION.** The concrete or masonry which supports a building, including footings, stem walls, retaining walls, and grade beams.

**FOUNDATION EXTENDING IN THE DOWNHILL-DIRECTION.** A foundation running downhill and approximately perpendicular to the uphill foundation.

**FOUNDATION, UPHILL.** A foundation parallel and closest to the uphill diaphragm edge, as defined herein.

**HILLSIDE BUILDING.** Any building or portion thereof constructed on or into a slope steeper than 1 unit vertical in 3 units horizontal (33.3-percent slope). If only a portion of the building is supported on or into the slope, these regulations apply to the entire building.

**PRIMARY ANCHORS.** Are diaphragm anchors designed for and providing direct connection as described in LAMC Subsections 9406.2 and 9406.3 between the diaphragm and the uphill foundation.

**RETROFIT.** An improvement of the lateral force resisting system of the structure by an alteration of existing or addition of new structural elements.

**SECONDARY ANCHORS.** Diaphragm anchors designed for and providing a redundant diaphragm to foundation connection, as described in LAMC Subsection 9406.4.

**UPHILL DIAPHRAGM EDGE.** The edge of the diaphragm adjacent to or closest to the highest ground level at the perimeter of the diaphragm.

### SECTION 9404 GENERAL REQUIREMENTS

Except as modified herein, the analysis and design of the work within the scope of this Chapter shall be in accordance with Chapter 16 of this Code.

## SECTION 9405 PRE-DESIGN INVESTIGATION

The engineer or architect shall prepare a pre-design field investigation report in accordance with Department guidelines and shall file the report when the plans are filed for permit. The plans shall include a description of the existing lateral force resisting system at and below the base.

## SECTION 9406 ANALYSIS AND DESIGN

**9406.1 General.** Every hillside building within the scope of this Chapter shall be analyzed, designed, and constructed in accordance with the following provisions.

**9406.1.1 Base for seismic design defined.** The base for seismic design is defined as follows:

1. Downhill-Direction. For seismic forces acting in the downhill-direction, the base of the building shall be the floor at or closest to the top of the highest level of the foundation.
2. Normal to the Downhill-Direction. For seismic forces acting normal to the downhill-direction, the distribution of seismic forces over the height of the building using Section 12.8.3 of ASCE 7 shall be determined using the height measured from the top of the lowest level of the building foundation. Retrofitting, however, shall only be required at the base-level-diaphragm and below.

**9406.1.2 Design base shear.** The design base shear shall be that required at the time of the original building permit, or not less than 75 percent of the currently required by Section 12.8.1 of ASCE 7, but in no case not less than the following:

$$V = 0.133W.$$

Where:

$V$  = The total design lateral force or shear at the base.

$W$  = The total seismic dead load defined in Section 12.7.2 of ASCE 7.

### 9406.2 Base shear resistance in the downhill-direction.

**9406.2.1 General.** The base shear in the downhill-direction, including forces from the base-level-diaphragm, shall be resisted through primary anchors from diaphragm struts or collectors provided in the base level framing to the foundation.

**9406.2.2 Location of primary anchors.** A primary anchor and diaphragm strut or collector shall be provided in line with each foundation extending in the downhill-direction. Primary anchors and diaphragm struts or collectors shall also be provided where interior vertical lateral force resisting elements occur above and in contact with the base-level-diaphragm.

The base-level-diaphragm shall be provided with primary anchors designed for the tributary forces spaced at a maximum 30 feet (9.14 m) on center. Where the floor below the base extends to the uphill foundation, and the

foundation at the base is not adequate to resist the forces from the primary anchors, the base shear may be transferred to that lower level and the primary anchorage made at that lower level. The connection shall be made directly to the foundation. The existing foundation shall be evaluated as specified in Section 9406.11.

### 9406.3 Seismic forces on floor levels below the base in the downhill-direction.

**9406.3.1 General.** All floor diaphragm connections between floor diaphragms below the base level diaphragm shall be designed in accordance with the provisions of this section.

**9406.3.2 Design.** Each floor level below the base defined in Section 9406.1.1 shall be designed for all tributary loads at that level using a minimum seismic force factor not less than the base shear coefficient.

**9406.3.3 Direct connections.** Each floor level shall be directly connected to the foundation through a system of primary anchors at that level as required for the base as specified in Section 9406.1.1.

### 9406.4 Secondary anchors from diaphragm to foundation for seismic forces at and below the base in the downhill-direction.

**9406.4.1 General.** In addition to the anchors required by Sections 9406.2 and 9406.3, the floor diaphragm for levels at and below the base shall be anchored to the uphill foundation at the level of the diaphragm, as specified in this section.

**Exception:** Secondary anchors are not required where:

1. The concrete or masonry foundations in the downhill-direction are spaced at not more than 30 feet (9.14 m) on center and extend up to and are directly connected to the base-level-diaphragm for at least 70 percent of the diaphragm depth; or
2. The diaphragm is separated from the mudsill at the uphill foundation by a cripple wall which has anchor bolts and is braced in the plane of the wall and constructed with studs that are no less than 12 inches (304.8 mm) in height and primary anchors are spaced a maximum of 20 feet (6.096 m) on center; or
3. The deflection of the plywood floor diaphragm between adjacent primary anchors is calculated to be less than  $\frac{1}{4}$  of an inch (6.35 mm).

**9406.4.2 Diaphragm anchors.** Secondary anchors required by this section shall be provided at each level at and below the base of the building. Diaphragm anchors shall be fully inserted into the diaphragm and be connected to the foundation at the uphill diaphragm edge to develop the forces required by this section.

**9406.4.3 Anchor spacing.** Secondary anchors required by this section shall be uniformly distributed along the uphill diaphragm edge and shall be spaced a maximum of 4 feet (1219.2 mm) on center.

**9406.4.4 Anchor capacity for floor diaphragms at the base and below.** Secondary anchors at the base and below shall be designed for a uniformly distributed minimum force equal to the total primary anchorage design force at that level divided by the length of the uphill diaphragm edge, but shall not be less than 300 pounds per lineal foot (4.37 kN/m). The existing foundation need not be checked to resist the additional forces induced by the system of secondary anchors; however, the existing foundation shall be evaluated as specified in Section 9406.11.

#### **9406.5 Design of anchorage.**

**9406.5.1 General.** Primary and secondary anchors, and diaphragm struts and collectors, shall be designed in accordance with the provisions of this section.

**9406.5.2 Anchorage.** The structure shall be anchored to the foundation as specified in Sections 9406.2, 9406.3 and 9406.4.

**9406.5.3 Fasteners.** All bolted fasteners used to develop connections to wood members shall be provided with square plate washers at all bolt heads and nuts. Washers shall be minimum  $\frac{3}{16}$  inch (4.8 mm) thick and 2 inch (50.8 mm) square for  $\frac{1}{2}$  inch (12.7 mm) diameter bolts, and  $\frac{1}{4}$  inch (6.35 mm) thick and  $2\frac{1}{2}$  inch (63.5 mm) square for  $\frac{5}{8}$  inch (15.9 mm) diameter or larger bolts. Nuts shall be wrench tightened prior to covering.

**9406.5.4 Fastening.** The diaphragm to foundation anchorage shall not be accomplished by the use of toe nailing, nails subject to withdrawal, or wood in cross grain bending or cross grain tension.

**9406.5.5 Size of wood members.** Wood diaphragm struts, collectors, and other wood members connected to primary anchors shall not be less than 3 inch (76.2 mm) nominal width members or doubled 2 inch (50.8 mm) nominal width members. Fastening doubled 2 inch (50.8 mm) nominal width members shall be designed in accordance to the provisions of CBC Chapter 23. Secondary diaphragm anchors as specified in Section 9406.4 may be developed through existing 2 inch (50.8 mm) nominal width framing members. The effects of eccentricity on wood members shall be evaluated as required per Section 9406.5.9.

**9406.5.6 Design.** Primary and secondary anchorage, including diaphragm struts, splices, and collectors shall be designed for 125 percent of the tributary force.

**9406.5.7 Allowable stress increase.** The one-third allowable stress increase shall not be permitted for materials using allowable stress design methods.

**9406.5.8 Seismic load factor.** Steel elements of the diaphragm anchorage systems and continuity ties shall be designed by the allowable stress design method using a load factor of 1.7. The strength design specified in Section 1908 using a load factor of 2.0 in lieu of 1.4 for earthquake loading shall be used for the design of embedment in concrete.

**9406.5.9 Symmetry.** All seismic lateral force foundation anchorage and diaphragm strut connections shall be symmetrical. Eccentric connections may be permitted when

demonstrated by calculation or tests that all components of force have been provided for in the structural analysis or tests.

#### **9406.5.10 Load path.**

**9406.5.10.1 Primary anchors.** The load path for primary anchors shall be fully inserted into the diaphragm and into the foundation. The foundation must be shown to be adequate to resist the concentrated loads from the primary anchors and must be shown to comply with the following:

1. Soil maximum bearing capacity for conventional footings shall be limited to 3000 psf (143.7 kPa) unless an approved geotechnical report permits higher bearing values.
2. Conventional continuous footings shall be analyzed for uplift forces induced by primary anchors.
3. Soil capacities need not be investigated for grade beam and caisson or pile foundations.
4. Shear stress in grade beams and tie beams shall be investigated for vertical component of primary anchor forces. Unless otherwise known, a maximum 2000 psi (13.8 MPa) concrete strength shall be assumed.

**9406.5.10.2 Secondary anchors.** The load path for secondary anchors need not be developed beyond the connection to the foundation.

**9406.5.10.3 Above base uplift forces.** The load path for uplift forces generated from above the base shall be analyzed and fully developed into the below base structural system.

#### **9406.6 Base shear resistance normal to the downhill-direction.**

**9406.6.1 General.** Lateral force resisting elements acting in the normal to the downhill-direction shall be designed in accordance with the requirements of following Sections.

**9406.6.2 Base shear.** The design base shear shall be 75 percent less than currently required by Section 12.8.1 of ASCE 7, but not less than the following:

$$V = 0.133W$$

where:

$V$  = The total design lateral force or shear at the base

$W$  = The total seismic dead load defined in Section 12.7.2 of ASCE 7

**9406.6.3 Vertical distribution of seismic forces.** The distribution of seismic forces acting normal to the downhill-direction shall be determined using Section 12.8.3 of ASCE 7. The height of the structure in Equation (12.8-12) of Section 12.8.3 of ASCE 7 shall be taken from the base, which shall be measured from the top of the lowest level of the building foundation.

**9406.6.4 Drift limitations.** The interstory drift below the base-level-diaphragm shall not exceed 0.005 times the story height. The total drift from the base-level-diaphragm

to the top of the foundation shall not exceed  $\frac{3}{4}$  inch (19 mm). Where the story height or the height from the base-level-diaphragm to the top of the foundation varies because of a stepped footing or story offset, the height shall be measured from the average height of the top of the foundation. The calculated story drift shall not be reduced by the effect of horizontal diaphragm stiffness.

#### **9406.7 Lateral force resisting systems at the base and below in the downhill-direction.**

**9406.7.1 General.** As an alternative to providing primary anchor connections from diaphragms to foundation in the downhill-direction, the following systems may be used, provided their location and spacing is maintained as specified in Section 9406.2.2 for primary anchors.

**9406.7.2 Wood shear walls.** Wood structural panels or existing wood diagonal sheathed shear walls may be used provided:

1. The minimum length of shear wall shall be 8 feet (2438.4 mm).
2. The minimum level length between steps in the shear wall sill shall be 8 feet (2438.4 mm) and the maximum step height between adjacent sills shall be 2 feet 8 inches (812.8 mm).
3. Sill plates do not slope and they bear on a level surface.
4. The design lateral forces shall be distributed to lateral force resisting elements of varying heights in accordance with the stiffness of each individual element. The stiffness of a stepped wood structural panel shear wall may be determined by dividing the wall into adjacent rectangular elements, subject to the same top of wall deflection. Deflections of shear walls may be estimated by Section 2305 and AWC SDPWS Section 4.3.2 or other equivalent methods. Sheathing and fastening requirements for the stiffest section shall be used for the entire wall. Each section of wall shall be anchored for shear and uplift at each step as an independent shear wall.
5. Actual configuration of steps shall be determined in the field at the time of pre-design investigation.
6. The drift limitations of Section 9406.6.4 are not exceeded.

**9406.7.3 Braced frames.** Structural steel braced frames with concentric connections may be used as part of the lateral force resisting system. All members in braced frames shall be designed to resist tension and compression forces. Seismic forces shall not induce flexural stresses in any member of the frame, in diaphragm struts, or in the collectors. Where existing anchor bolts are used for anchorage, existing confinement shall be verified and additional confinement provided where necessary. When the braced frame is not rectangular, distribution of forces to members shall account for the variations in slope.

**9406.7.4 Rod-braced frames and diaphragms.** Existing tension only braces may be used provided they resist five times the design force, and the connections have the

capacity to resist the yield strength of the braces. Tension braces and their connections shall be exposed for evaluation. Existing anchor bolts shall be tested in shear and tension to five times the design force.

**9406.7.5 Cement plaster and lath and gypsum wall-board.** The sheathing materials listed in Chapter 25 are not permitted to resist seismic lateral forces below the base-level-diaphragm.

**9406.8 Lateral force resisting systems at the base and below and normal to the downhill-direction.** Lateral force resisting systems acting normal to the downhill-direction may include steel moment frames and those systems permitted under Section 9406.7, provided the drift limitations of Section 9406.6.4 are not exceeded.

#### **9406.9 Diaphragms.**

**9406.9.1 General.** Diaphragms at the base and below may be of straight 1 inch by 6 inches (25.4 mm by 152.4 mm) or 2 inches by 6 inches (50.8 mm by 152.4 mm) sheathing, provided vertical lateral force resisting elements in the downhill-direction or primary anchors are spaced no more than 20 feet (6.09 m) apart and the diaphragm shear forces do not exceed 100 plf (1.46 kN/m).

**9406.9.2 Existing diaphragms.** Existing plywood and diagonally sheathed diaphragms need not be investigated.

**9406.9.3 Existing cantilevered diaphragms.** Existing cantilevered wood diaphragms are acceptable provided they do not cantilever more than one-half the diaphragm backspan (anchor span).

**9406.9.4 Wood diaphragm rotation.** Diaphragm rotation is not permitted in resisting lateral forces.

#### **9406.10 Steel beam to column connections.**

**9406.10.1 General.** All steel beam to column connections shall be braced at supports and locations of concentrated loads. The beam to column connection shall be designed to prevent rotation of the beam.

**9406.10.2 Steel beams.** Steel beams shall have stiffener plates installed on each side of the beam web at the column supports and points of concentrated load. The stiffener plates shall be welded to each beam flange and beam web. This requirement applies at the base and below and only to those connections which are part of the lateral load resisting system or lateral load path.

**9406.10.3 Column bracing.** All single length multi-level height columns shall be braced in each orthogonal direction at each diaphragm level.

#### **9406.11 Foundations.**

**9406.11.1 Existing foundations.** Foundation soundness shall be verified by the engineer or architect. Foundation types such as unreinforced masonry, stone and ungrouted concrete block and unreinforced concrete shall be retrofitted to resist lateral loads applied through the diaphragm anchors.

**9406.11.2 Damaged foundations.** Damaged foundations shall be evaluated by the engineer or architect. Cracks in excess of  $\frac{1}{8}$  inch (3.2 mm) or differential displacement in



excess of  $\frac{1}{4}$  inch (6.35 mm) shall be further investigated and repaired where necessary. Specifications for the restoration of the earth to wood separation shall be included and be made a part of the plans.

**9406.11.3 Stud wall attachment.** Shot pinned anchors shall not be used to resist lateral forces. Lateral force resisting systems which utilize shot pins shall be retrofitted with approved drilled anchors.

**9406.11.4 Existing framing connections.** Deteriorated framing and connections shall be repaired or replaced.

**9406.11.5 Metal connectors.** Metal connectors shall not be in contact with, or below earth unless the connectors are hot dipped galvanized and further protected from earth with 4 inches (101.6 mm) of concrete.

#### **9406.12 Existing Materials.**

**9406.12.1 Allowable stresses.** Existing materials may be used as part of the lateral load-resisting system provided that the stresses in these materials do not exceed the values shown in Table 94-A.

### **SECTION 9407 HISTORICAL BUILDINGS**

Qualified Historical Buildings shall be allowed to use alternate building regulations or deviations from this Chapter in order to preserve their original or restored architectural elements and features. See Section 8119 for these standards.

### **SECTION 9408 QUALITY CONTROL**

**9408.1 General.** All hillside building construction shall comply with the requirements specified in this section.

**9408.2 Department called inspections.** All anchors installed in accordance with Sections 9406.2, 9406.3 and 9406.4 shall be inspected by the Department prior to installation of any construction which might restrict access to the anchors or prevent a visual inspection from the floor level above the anchors.

**9408.3 Structural observation by the engineer or architect of record.** The owner shall employ the engineer or architect of record, or other engineer or architect designated by the

engineer or architect of record, to perform structural observations as required by Section 1710.

**9408.4 Anchor installation.** No installed anchor shall be covered prior to all required Department framing inspections and structural observation by the architect or engineer.

### **SECTION 9409 INFORMATION REQUIRED ON PLANS**

**9409.1 General.** The licensed engineer or architect responsible for the seismic analysis of the building shall record the information required by this section on the approved plans. The plans shall accurately reflect the results of the engineering investigation and design and show all pertinent dimensions and sizes for plan review and construction. The plans shall show existing framing construction, diaphragm construction, proposed primary, alternate and secondary anchors, proposed shear walls and collectors for the base and below. All structural elements that are part of the design including existing nailing, anchors, ties, and collectors, shall be shown on the plans. The plans shall indicate existing construction that has not been exposed and needs verification at the time of construction.

**9409.2 Building elevations.** Elevations showing the existing conditions shall be drawn to scale. Elevations shall show roof and floor heights, dimensions of openings, location and extent of existing damage, and proposed repair and strengthening.

**9409.3 Shear walls.** Plans shall include all information pertinent to shear walls, including typical wall panel thickness, length, and the location and size of all anchors.

**9409.4 Details.** Details shall include the existing lateral bracing systems to be utilized including work required for the lateral and vertical load systems and new anchors and the method of development of anchor forces into the diaphragm framing.

**9409.5 Engineer's or architect's statement.** The responsible engineer or architect shall state on the approved plans the following:

1. "I am responsible for designing the strengthening for this building's base level and below in compliance with

**TABLE 94-A  
VALUES FOR EXISTING MATERIALS**

EXISTING MATERIALS OR CONFIGURATION OF MATERIALS <sup>1</sup>	ALLOWABLE VALUES
1. Plain or reinforced concrete footings	$f'_c = 2000$ psi (13.8 MPa) unless otherwise shown by tests.
2. Douglas fir wood	Allowable stress same as No. 2 D.F.
3. Reinforcing steel	$f_s = 0.4 F_y$ , maximum 16 ksi (110 MPa).
4. Structural steel	$f_b = 0.6 F_y$ , maximum 22 ksi (152 MPa).
5. Anchor bolts	Current code values.
6. Wood structural panels/diagonal sheathing	Current code values.

1. Material must be sound and in good condition.

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the minimum regulations of Chapter 94 of the LABC;  
and either I or someone under my responsible charge  
has performed the pre-design investigation.”or when  
applicable:

- 2. “The Registered Deputy Inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by LAMC Section 1704.”

## CHAPTER 95

# MANDATORY EARTHQUAKE HAZARD REDUCTION IN EXISTING NON-DUCTILE CONCRETE BUILDINGS

### SECTION 9501 PURPOSE

The purpose of this chapter is to promote the public welfare and safety by reducing the risk of death or injury that may result from the effects of earthquakes on existing concrete buildings. In the Northridge Earthquake, many concrete buildings constructed prior to the 1976 *Los Angeles City Building Code* provisions performed poorly and collapsed, causing loss of human life, personal injury and property damage. Similar loss of life, injury and property damage occurred in the Great Hanshin Earthquake, Mexico City Earthquake, and Christchurch New Zealand Earthquake due to the outdated building codes in those communities. The poor performance of these older concrete buildings is typically due to deficiencies in the lateral force resisting system (beams, columns and joints) that render the building incapable of sustaining gravity loads when the building is subjected to earthquake-induced lateral displacements. This chapter creates minimum standards to mitigate hazards from these structural deficiencies. Adherence to these minimum standards will improve the performance of these buildings during earthquakes and reduce, but not necessarily prevent, the loss of life, injury or earthquake-related damage.

### SECTION 9502 SCOPE

The provisions of this chapter shall apply to any existing concrete building built pursuant to a permit application for a new building that was submitted before January 13, 1977, or, if no permit can be located, the structure is determined by the Department to have been built under building code standards enacted before January 13, 1977.

**Exceptions:** This chapter shall not apply to detached single-family dwellings or detached duplexes. Moreover, notwithstanding any provision of this Code, compliance with this chapter shall not require existing electrical, plumbing, mechanical or fire-safety systems to be altered to comply with existing code unless they constitute a hazard to life or property.

### SECTION 9503 DEFINITIONS

The following words and phrases, whenever used in this chapter, shall be construed as defined in this section. Words and phrases not defined here shall be construed as defined in Chapter 2 of this Code.

**CONCRETE BUILDING** is a building having concrete floors and/or roofs, either with or without beams, supported by concrete walls and/or concrete columns, and/or concrete frames with or without masonry infills, or any combination thereof.

**DUPLEX** is a building containing only two single-family dwelling units.

**DWELLING UNIT** shall include any individual residential unit within either an R-1 or R-2 occupancy building, including a mixed-occupancy building when part of it is either an R-1 or R-2 occupancy. A dwelling unit shall include the area of a building that is occupied as a dwelling unit, whether the building is approved or unapproved for residential use.

**QUALIFIED HISTORICAL BUILDING** is any building designated or currently in the process of being designated as a "qualified historical building" as defined in Part 8, Title 24 of the California Code of Regulations.

**MASONRY INFILL** is the unreinforced or reinforced masonry wall construction within a reinforced concrete frame.

**RETROFIT** is an improvement of the lateral force-resisting system by alteration of existing structural elements or addition of new structural elements.

**SINGLE-FAMILY DWELLING** is any building with one dwelling unit which contains living facilities, including provisions for sleeping, eating, cooking and sanitation, as required by this Code.

### SECTION 9504 COMPLIANCE REQUIREMENTS

**9504.1 General.** The owner of each building within the scope of this chapter shall cause a structural analysis to be made of the building by a civil or structural engineer or architect licensed by the state of California, and if the building does not meet the minimum engineering standards specified in this chapter, the owner shall cause the building to be structurally altered to conform to such standards or, at the owner's option, cause it to be demolished within the time limits stated in Section 9504.0.

**9504.2 Time Limits for Compliance.** The owner of a building within the scope of this chapter shall comply with its requirements by completing the following actions within the time limits stated below:

1. Within three (3) years after service of the order described in Section 9505, submit on the form provided by the Department a completed checklist for the Department to review and approve.
2. If the building is determined to be a non-ductile concrete building pursuant to Subdivision 1, within ten (10) years after service of the order, submit a detailed evaluation of the building documenting whether the building meets or exceeds the requirements set forth in Section 9508. The evaluation shall include one of the following:
  - (a) Proof that the building was previously retrofitted in conformity with the provisions in either Chap-

ter 85 or former Chapter 95 (Ordinance Nos. 171,260 and 176,673) of the *Los Angeles Building Code* (LABC).

- (b) Proof that the building was previously retrofitted in conformity with the engineering requirements of this chapter.
- (c) A report consisting of a structural analysis that shows the building meets the engineering requirements of this chapter.
- (d) A report consisting of a structural analysis and plans for the proposed structural alteration of the building to comply with the engineering requirements of this chapter.
- (e) Plans for demolition of the building.

3. Within twenty-five (25) years after service of the order, complete all necessary demolition or retrofit work on the building.

Time limits for compliance shall be based on the service date of the original order from the Department. Transfer of title shall not change compliance dates.

#### SECTION 9505 ADMINISTRATION

**9505.1 Issuance of order.** When the Department determines that a building is within the scope of this chapter, the Department shall issue an order to the owner as described in Sections 9505.2 and 9505.4.

**9505.2 Service of order.** The Department shall serve the order in writing, either personally or by certified or registered mail, upon the owner as shown on the last equalized assessment roll. Service by mail shall be deemed complete at the time of deposit in the post office. Proof of giving notice may be made by an affidavit of an employee of the City that shows service in conformity with this chapter.

**9505.3 Failure to receive order.** Failure of the owner to receive an order shall not relieve the owner of any obligation to comply with the provisions of this chapter.

**9505.4 Contents of order.** The order shall specify that the building has been determined by the Department to be within the scope of this chapter and, therefore, is required to meet the minimum seismic standards described in Section 9108. The order shall be accompanied by a copy of Section 9504, which sets forth the owner's alternatives and time limits for compliance.

**9505.5 Appeal from order.** The owner of any building subject to this chapter may appeal the Department's initial determination that the building is within the scope of this chapter to the Board of Building and Safety Commissioners. Such appeal shall be filed with the Board within 60 days from the service date of the order. Any such appeal shall be decided by the Board no later than 60 days after the date that the appeal is filed. Such appeal shall be made in writing upon appropriate forms provided by the Department, and the grounds of the appeal shall be stated clearly and concisely. Each appeal shall be accompanied by a filing fee as set forth in Table No. 4-A of Division 4 of Article 8 of Chapter IX of the *Los Angeles Municipal Code*.

Requests for slight modifications from any other determinations, orders or actions by the Department pursuant to this chapter shall be made in accordance with the procedures established in Section 98.0403.2 of the *Los Angeles Municipal Code*.

**9505.6 Recordation.** At the time that the Department serves the order described in Section 9505.1, the Department shall file with the Office of the County Recorder a certificate stating that the subject building has been determined to be within the scope of this chapter, and that it has been ordered to be structurally analyzed and structurally altered or demolished (if the owner so decides), pursuant to Section 9504.2, if the Department determines that it does not conform to the minimum design standards of this chapter.

The Department shall file with the Office of the County Recorder a certificate terminating the above recorded status of the subject building if the building is thereafter demolished by owner pursuant to Section 9504.2, found not to be within the scope of this chapter, or is determined to be structurally capable of resisting minimum seismic forces as a result of structural alterations or analysis required by this chapter.

#### SECTION 9506 OCCUPANT AND TENANT ADVISORY

**9506.1 Notification to tenants and occupants.** When the Department determines that a building falls within the scope of this chapter, the owner shall advise all current and prospective residential and non-residential tenants, subtenants, lessees, sublessees, or any other person(s) entitled to the use and/or occupancy of the building of such determination. With respect to current and prospective residential tenants, subtenants, lessees, sublessees, or other person(s) entitled to the use and/or occupancy of the building, the property owner shall advise such persons of the Department's determination in a method and written format approved and promulgated by the Los Angeles Housing and Community Investment Department. With respect to current and prospective non-residential tenants, subtenants, lessees, sublessees, or other person(s) entitled to the use and/or occupancy of the building, the owner shall advise such persons of the Department's determination in a method and written format approved and promulgated by the Department.

**9506.2 Tenant habitability plan.** If required by the Rent Stabilization Ordinance, the property owner shall be required to submit to the Los Angeles Housing and Community Investment Department a Tenant Habitability Plan pursuant to Article 2, Chapter XV of the *Los Angeles Municipal Code* (L.A.M.C. Section 152.03 B.). If, upon review of the Tenant Habitability Plan, it is determined by the Los Angeles Housing and Community Investment Department that work required under this chapter affects the tenantability of any building or residential unit as defined in California Civil Code Section 1941.1, the owner shall be required to pay relocation benefits pursuant to Article 1, Chapter XV of the *Los Angeles Municipal Code* (L.A.M.C. Section 151.09 G.) to any tenant, subtenant, lessee, sublessee, or other person(s) entitled to the use and/or occupancy of the building that is affected by the untenable conditions or displaced from the

residential unit. However, the mere undertaking and completion of work performed by the owner pursuant to this chapter shall not, in and of itself, result in any building or residential unit being deemed untenable or uninhabitable as defined in California Civil Code Section 1941.1.

### SECTION 9507 HISTORICAL BUILDINGS

Qualified historical buildings shall comply with requirements of the *California Historical Building Code* established under Part 8, Title 24 of the California Code of Regulations.

### SECTION 9508 ENGINEERING ANALYSIS

**9508.1 Scope of analysis.** This chapter requires the alteration, repair, replacement or addition of structural elements and their connections to meet the following requirements in this section.

**9508.2 Building structural analysis, design and evaluation.** The building shall meet one of the following criteria:

1. Strength of the lateral-force resisting system shall meet or exceed seventy-five percent (75%) of the base shear specified in the current *Los Angeles Building Code* seismic provisions. Elements not designated to be part of the lateral-force resisting system shall be adequate for gravity load effects and seismic displacement due to the full (100%) of the design story drift specified in the current *Los Angeles Building Code* seismic provisions.
2. Meet or exceed the requirements specified for “Basic Performance Objective for Existing Buildings” of ASCE 41, using a Tier 3 procedure and the two level performance objective for existing buildings (BPOE) in Table 2-1 for the applicable risk category, and using ground motions and procedures established by the Department.
3. Pursuant to Section 104.2.6, other methods approved by the Department deemed to be equivalent to the standards set forth in Subdivisions 1. and 2. of this subsection.

### SECTION 9509 INFORMATION REQUIRED ON PLANS

**9509.1 General.** For existing and new construction, the plans and specifications shall be of sufficient clarity to indicate the nature and extent of the proposed work and to show in detail that it will conform to the provisions of this chapter and the *Los Angeles Building Code*.

**9509.2 Engineer's or architect's statement.** The responsible engineer or architect shall provide the following statements on the approved plans:

1. “I am responsible for designing this building's seismic strengthening in compliance with the minimum standards of Chapter 95 of the *Los Angeles Building Code* using the design criteria of (75% of ASCE 7 or ASCE 41).”

2. “The Registered Deputy Inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by Section 1704 of the *Los Angeles Building Code*.”

3. “Structural Observation will be performed in accordance with the current *Los Angeles Building Code*.”

### SECTION 9510 VIOLATION/PENALTY

Notwithstanding any other provision of this Code to the contrary, it shall be unlawful for any person, firm, or corporation to maintain, use, or occupy any building within the scope of this chapter that fails to meet the minimum earthquake standards specified in this chapter after receiving an order described in Section 9505.

Any person who violates or causes or permits another person to violate this chapter is guilty of a misdemeanor, and shall be subject to prosecution and/or administrative enforcement under the *Los Angeles Municipal Code*. For purposes of this paragraph, “any person” includes an owner, lessor, sublessor, manager or person in control of a building subject to this chapter. This term shall not include any person who is merely a tenant or other individual occupying any dwelling unit, efficiency dwelling unit, guest room or suite in a building. The legal owner of a building is that person, firm, corporation, partnership or other entity whose name or title appears on the record with the Office of the County Recorder, as well as all successors or assignees of these persons.

**Exception:** This section shall not apply to any building on which work is proceeding in compliance with the time limits set forth in this chapter, or in compliance with any extensions of time granted by the Department or the Board; or any action, order or determination made by the Department or the Board in the implementation of this chapter.

### SECTION 9511 SEVERABILITY

If any subsection, sentence, clause or phrase of this article is for any reason held to be invalid or unconstitutional by a court of competent jurisdiction or by reason of any preemptive legislation, such decision or legislation shall not affect the validity of the remaining portions of this ordinance. The City Council hereby declares that it would have adopted this section, and each and every subsection, sentence, clause and phrase thereof not declared invalid or unconstitutional, without regard to whether any portion of the ordinance would be subsequently declared invalid or unconstitutional.



## CHAPTER 96

# VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING REINFORCED CONCRETE AND REINFORCED MASONRY WALL BUILDINGS WITH FLEXIBLE DIAPHRAGMS

### SECTION 9601 PURPOSE

The purpose of this Chapter is to promote public safety and welfare by reducing the risk of death or injury that may result from the effects of earthquakes on reinforced concrete and masonry wall buildings with flexible diaphragms designed under the building codes in effect prior to January 1, 1995. These buildings are potentially hazardous and prone to significant damage, including possible collapse, in a moderate to major earthquake. These structures typically shelter large numbers of persons and property for retail, food markets, food distribution centers, warehousing, aerospace, industrial/manufacturing and general business and office use. Their continued use after an earthquake is also essential to the local economy and its post-earthquake recovery.

The provisions of this Chapter are minimum standards for structural seismic resistance established primarily to reduce the risk of loss of life or injury on both subject and adjacent properties and will not necessarily prevent all earthquake damage to an existing building which complies with these standards. This Chapter shall not require existing electrical, plumbing, mechanical or fire-safety systems to be altered unless they constitute a hazard to life or property.

This Chapter provides voluntary retrofit standards for deficient wall anchorage systems on structures that are not subject to the mandatory provisions of Chapter 91 of this Code. When fully followed, these standards will strengthen the portion of the structure that is most vulnerable to earthquake damage.

### SECTION 9602 SCOPE

The voluntary provisions of this chapter shall apply to existing buildings of the following types:

1. Cast-in-place reinforced concrete or masonry wall buildings with flexible diaphragms designed under building codes in effect prior to January 1, 1995.
2. Tilt-up concrete wall buildings with flexible diaphragms designed under the building codes in effect prior to January 1, 1995, but after January 1, 1976.

All tilt-up concrete wall buildings designed under the Building Code in effect prior to January 1, 1976, are subject to the mandatory provisions of Chapter 91 of this Code. All existing reinforced masonry or concrete buildings with flexible diaphragms, including tilt-up concrete wall buildings, designed under the Building Code in effect on or after January 1, 1995, shall be designed in conformance with Chapter 16 of this Code.

### SECTION 9603 DEFINITIONS

For the purposes of this Chapter, the applicable definitions in Chapter 2, Sections 1602, 1613.2, 1902 and 2302; Sections 1.2, 3.1, 4.1 and 11.2 of ASCE 7, and the following shall apply:

**ANCHORAGE SYSTEM.** The system of all structural elements and connections, which support the concrete or masonry wall in the lateral direction, including diaphragms and subdiaphragms, wall anchorage and continuity or cross tie connectors in subdiaphragms and main diaphragms.

**COMMENCED CONSTRUCTION.** Construction pursuant to a valid building permit that has progressed to the point that one of the called inspections as required by the Department has been made and the work for which the inspection has been called has been judged by the Department to be substantial and has been approved by the Department.

**EXISTING BUILDING.** An erected building for which a legal building permit and a certificate of occupancy have been issued.

**FLEXIBLE DIAPHRAGM.** Any diaphragm constructed of wood structural panel, diagonal or straight wood sheathing, metal decking without a structural concrete topping, or horizontal rod bracing.

**HISTORICAL BUILDING.** Any building designated or currently in the process of being designated as a historical building by an appropriate federal, state or City jurisdiction.

**REINFORCED CONCRETE WALL.** A concrete wall that has 50 percent or more of the reinforcing steel required for reinforced concrete in Chapter 19 of the LABC.

**REINFORCED MASONRY WALL.** A masonry wall that has 50 percent or more of the reinforcing steel required by Section 2.3 or Section 3.3 of ACI 530-05/ASCE 5-05/TMS 402/602-16 (MSJC).

**RETROFIT.** Strengthening or structurally improving the lateral force resisting system of an existing building by alteration of existing or addition of new structural elements.

**TILT-UP CONCRETE WALL.** A form of precast concrete panel construction either cast in the horizontal position at the site and after curing, lifted and moved into place in a vertical position, or cast off-site in a fabricator's shop.

### SECTION 9604 ANALYSIS AND DESIGN

**9604.1 Wall panel anchorage.** Concrete and masonry walls shall be anchored to all floors and roofs which provide lateral support for the wall. The anchorage shall provide a positive

direct connection between the wall and floor or roof construction capable of resisting a horizontal force equal to 30 percent of the tributary wall weight for all buildings, and 45 percent of the tributary wall weight for essential buildings, or a minimum force of 250 pounds per linear foot of wall, whichever is greater.

**Exception:** Using 75 percent of the design force as specified in Section 12.11 of ASCE 7 and completely in compliance with all the requirements as specified in that Section is considered equivalent to the requirements specified in this Section and Section 9604.2.

The required anchorage shall be based on the tributary wall panel assuming simple supports at floors and roof.

**Exception:** An alternate design may be approved by the Superintendent of Building when justified by well established principles of mechanics.

**9604.2 Special requirements for wall anchors and continuity ties.** The steel elements of the wall anchorage systems and continuity ties shall be designed by the allowable stress design method using a load factor of 1.7. The  $\frac{1}{3}$  stress increase permitted by Section 1605.3.1.1 shall not be permitted for materials using allowable stress design methods.

The strength design shall be per Section 17.2.3 of ACI 318-14, unless modified by CBC Section 1905.1.8.

Wall anchors shall be provided to resist out-of-plane forces, independent of existing shear anchors.

**Exception:** Existing cast-in-place shear anchors may be used as wall anchors if the tie element can be readily attached to the anchors and if the engineer or architect can establish tension values for the existing anchors through the use of approved as-built plans or testing, and through analysis showing that the bolts are capable of resisting the total shear load while being acted upon by the maximum tension force due to seismic loading. Criteria for analysis and testing shall be determined by the Superintendent of Building.

Expansion anchors are not allowed without special approval of the Superintendent of Building. Attaching the edge of plywood sheathing to steel ledgers is not considered as complying with the positive anchoring requirements of the Code; and attaching the edge of steel decks to steel ledgers is not considered as providing the positive anchorage of this Code unless testing and analysis are performed, which establish shear values for the attachment perpendicular to the edge of the deck.

**9604.3 Development of anchor loads into the diaphragm.** Development of anchor loads into roof and floor diaphragms shall comply with Section 12.11 of ASCE 7.

**Exception:** If continuously tied girders are present, then the maximum spacing of the continuity ties is the greater of the girder spacing or 24 feet (7315 mm).

In wood diaphragms, anchorage shall not be accomplished by use of toe nails or nails subject to withdrawal, nor shall wood ledgers, top plates or framing be used in cross-grain bending or cross-grain tension. The continuous ties required

by Section 1613.5 and Section 12.11 of ASCE 7 shall be in addition to the diaphragm sheathing.

Lengths of development of anchor loads in wood diaphragms shall be based on existing field nailing of the sheathing unless existing edge nailing is positively identified on the original construction plans or at the site.

At reentrant corners, continuity collectors may be required for existing return walls not designed as shear walls, to develop into the diaphragm a force equal to the lesser of the rocking or shear capacity of the return wall, or the tributary shear but not exceeding the capacity of the diaphragm. Shear anchors for the return wall shall be commensurate with the collector force. If a truss or beam other than rafters or purlins is supported by the return wall or by a column integral with the return wall, an independent secondary column is required to support the roof or floor members whenever rocking or shear capacity of the return wall is governing.

**9604.4 Anchorage at pilasters.** Anchorage of pilasters shall be designed for the tributary wall anchoring load per Section 9604.1, considering the wall as a two-way slab. The edge of the two-way slab shall be considered “fixed” when there is continuity at pilasters, and considered “pinned” at roof or floor levels. The pilasters or the walls immediately adjacent to the pilasters shall be anchored directly to the roof framing such that the existing vertical anchor bolts at the top of the pilasters are by-passed without causing tension or shear failure at the top of the pilasters.

**Exception:** If existing vertical anchor bolts at the top of the pilasters are used for the anchorage, then additional exterior confinement shall be provided.

The minimum anchorage at a floor or roof between the pilasters shall be that specified in Section 9604.1.

**9604.5 Symmetry.** Symmetry of connectors in the anchorage system is required. Eccentricity may be allowed when it can be shown that all components of forces are positively resisted and justified by calculations or tests.

**9604.6 Minimum roof member size.** Wood members used to develop anchorage forces to the diaphragm shall be of minimum three-inch nominal width for new construction and replacement. All such members must be designed for gravity and earthquake forces as part of the wall anchorage system. For existing structural members, the allowable stresses shall be without the  $\frac{1}{3}$  stress increase per Section 9604.2.

**9604.7 Combination of anchor types.** To repair and retrofit existing buildings, a combination of different anchor types of different behavior or stiffness shall not be permitted. The capacity of the new and existing connectors cannot be added.

**9604.8 Prohibited anchors.** Usage of connectors that were bent or stretched from the intended use shall be prohibited.

**9604.9 Crack and damage repairs, evaluation of existing structural alterations.** The engineer or architect shall report any observed structural conditions and structural damage that have imminent life safety effects on the buildings and recommend repairs. This includes alterations such as openings cut in existing wall panels without a building permit. Evaluations and repairs shall be reviewed and approved by the Department.



**9604.10 Miscellaneous.** Existing mezzanines relying on the concrete or masonry walls for vertical or lateral support shall be anchored to the walls for the tributary mezzanine load. Walls depending on the mezzanine for lateral support shall be anchored per Sections 9604.1, 9604.2 and 9604.3.

**Exception:** Existing mezzanines that have independent lateral and vertical support need not be anchored to the concrete or masonry walls.

Existing interior masonry or concrete walls not designed as shear walls, which extend to the floor above or to the roof diaphragm shall also be anchored for out-of-plane forces per Section 9604.1, 9604.2 and 9604.3. In the in-plane direction, the walls may be isolated or shall be developed into the diaphragm for a lateral force equal to the lesser of the rocking or shear capacity of the wall, or the tributary shear but not exceeding the diaphragm capacity.

**9604.11 Historical buildings.** Qualified historical buildings shall be permitted to use alternate building standards or deviations from this chapter in order to preserve their original or restored architectural elements and features. See Chapter 84 of this Code for these alternatives.

## SECTION 9605 MATERIALS OF CONSTRUCTION

All materials permitted by this Code, including their appropriate allowable stresses and those existing configurations of materials specified in Chapter 88 of this Code, may be utilized to meet the requirements of this Chapter.

## SECTION 9606 INFORMATION REQUIRED ON PLANS

**9606.1 General.** In addition to the seismic analysis required elsewhere in this chapter, the licensed engineer or architect responsible for the seismic analysis of the building shall record the information required by this section on the approved plans.

**9606.2 Information required.** The plans shall accurately reflect the results of the engineering investigation and design and show all pertinent dimensions and sizes for plan review and construction. The following shall be provided:

1. Floor plans and roof plans shall show the existing framing construction, diaphragm construction, proposed wall anchors, cross-ties and collectors. Existing nailing, anchors, ties and collectors shall also be shown on the plans if these are part of the design, and these structural elements need to be verified in the field.
2. At elevations where there is alterations or damage, the details shall show the roof and floor heights, dimensions of openings, location and extent of existing damage, and proposed repair.

3. Typical concrete or masonry wall sections with wall thickness, height, and location of anchors shall be provided.
4. Details shall include the existing and new anchors and the method of development of anchor forces into the diaphragm framing; existing and new cross-ties, existing and new or improved support of the roof and floor girders at pilasters or walls.

**9606.3 Engineer's or architect's statement.** The responsible engineer or architect shall state on the approved plans, the following:

1. "I am responsible for this building's seismic strengthening design of the tilt-up concrete wall anchorage system in compliance with the minimum seismic resistance standards of Chapter 96 of the LABC." or when applicable:
2. "The Registered Deputy Inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by LAMC Section 91.1704."



## CHAPTER 97

# EXISTING BUILDINGS ENERGY AND WATER EFFICIENCY PROGRAM

### SECTION 9701 TITLE

This chapter shall be known as the City of Los Angeles Existing Buildings Energy and Water Efficiency (EBEWE) Program.

### SECTION 9702 PURPOSE

It is the purpose of this chapter to reduce energy and water consumption in buildings, including existing buildings, in the City of Los Angeles. These efficiency improvements will lower the use of energy, water, and greenhouse gas emissions citywide.

### SECTION 9703 SCOPE

This chapter shall apply to all buildings, including existing buildings, that are one of the following:

1. Owned by the City of Los Angeles and are 7,500 square feet (697 m<sup>2</sup>) or more.

**Exception:** Buildings owned by the City that are less than 15,000 square feet (1393 m<sup>2</sup>) are not subject to the requirements of Section 9706.

2. Privately owned and are 20,000 square feet (1858 m<sup>2</sup>) or more.
3. Owned by a local agency of the state that is required to comply with the City's building ordinances pursuant to Government Code Section 53090, *et seq.*, or successor legislation, and are 20,000 square feet (1858 m<sup>2</sup>) or more.

**Exception:** This chapter shall not apply to one- and two-family dwellings and related accessory structures; residential hotels as defined by the California Health and Safety Code Section 50519; broadcast antennas; vehicle charging stations; utility pumping stations; treatment facilities; sound stages; structures primarily used for the production and post-production of motion pictures and television, and similar uses; and other buildings not meeting the purpose of this chapter, as determined by the Department of Building and Safety.

### SECTION 9704 DEFINITIONS

The following words and phrases, whenever used in this chapter, shall be construed as defined in this section unless context indicates otherwise. Words and phrases not defined here shall be construed as defined in Sections 201 and 202.

**BASE BUILDING SYSTEMS.** The systems and subsystems of a building that use or distribute energy and/or water

and/or impact the energy and/or water consumption, including the building envelope; the heating ventilating and air conditioning (HVAC) systems; air conveying systems; electrical and lighting systems; domestic hot water systems; water distribution systems; plumbing fixtures and other water-using equipment; and landscape irrigation systems and water features. Base building systems shall not include:

1. Systems or subsystems owned by a tenant or for which a tenant bears full maintenance responsibility, that are within the tenant's leased space and exclusively serve such leased space, and for which the tenant pays all the energy and water bills according to usage and demand as measured by a meter or submeter.
2. Systems or subsystems owned by a residential unit owner that exclusively serve the residential unit of that owner.
3. Systems or subsystems that operate industrial applications such as manufacturing.

**BENCHMARKING REPORT.** A report, generated by ENERGY STAR® Portfolio Manager, summarizing the annual energy and water performance of a building.

**DEPARTMENT.** The City of Los Angeles Department of Building and Safety.

**ENERGY.** Electricity, natural gas, steam, heating oil, or other products sold by a utility to a customer of a building, or renewable on-site electricity generation, for purposes of providing heat, cooling, lighting, water heating, or for powering or fueling other end-uses in the building and related facilities.

**ENERGY AUDIT.** A systematic evaluation to identify potential modifications and improvements to a building's equipment and systems which utilize energy in order to optimize a building's overall energy performance.

**ENERGY STAR PORTFOLIO MANAGER.** The United States Environmental Protection Agency's (US EPA) online tool for measuring, tracking, and managing a building's energy, water and greenhouse gas emission data and to benchmark the performance of a building.

**ENERGY STAR PORTFOLIO MANAGER ENERGY STAR SCORE.** A number ranging from 1 to 100 assigned by the US EPA's Energy Star Portfolio Manager as a measurement of a building's energy efficiency, normalized for a building's characteristics, operations, and weather, according to methods established by US EPA's ENERGY STAR Portfolio Manager.

**RETRO-COMMISSIONING.** A systematic process for optimizing existing systems relating to building performance through the identification and correction of deficiencies in such systems.

**RETRO-COMMISSIONING MEASURES.** Work relating to retro-commissioning such as repairs, maintenance, adjust-

ments, changes to controls or related software, or operational improvements that optimize a building's energy and/or water performance.

**RETROFIT MEASURES.** Upgrades or alterations of building systems involving the installation of energy and/or water efficiency technologies that reduce energy and/or water consumption and improve the efficiency of such systems.

**WATER AUDIT.** A systematic evaluation to identify potential modifications and improvements to a building's equipment and systems which utilize water in order to optimize a building's overall water performance.

## SECTION 9705 BENCHMARKING AND SELF- REPORTING OF ENERGY AND WATER CONSUMPTION INFORMATION

**9705.1 Annual energy and water benchmarking and reporting.** For every building subject to this chapter, the building owner shall annually submit to the Department an energy and water benchmarking report according to the schedule set forth in Section 9708. The energy and water benchmarking report shall be based on an assessment in the ENERGY STAR Portfolio Manager of the total energy and water consumed by the whole building for the entire calendar year being reported. The energy and water benchmarking report shall, at minimum, include the following:

1. Descriptive Information. Basic descriptive information to track and report a building's compliance with this chapter, including, but not limited to, the building address, facility gross square footage, property type, and the individual or entity responsible for the benchmarking report.
2. Energy and Water Benchmarking Information. Information necessary to benchmark energy and water usage, including, at a minimum, the following data:
  - (a) The ENERGY STAR Portfolio Manager ENERGY STAR score for the building, where available.
  - (b) The weather-normalized site and source energy use intensity (EUI) per unit area per year (kBtu per square foot per year) for the building.
  - (c) The site and source energy use intensity (EUI) per unit area per year (kBtu per square foot per year) for the building.
  - (d) The annual carbon dioxide equivalent emissions due to energy use for the building as estimated by ENERGY STAR Portfolio Manager.
  - (e) Indoor water use, indoor water intensity, outdoor water use (when available), and total water use.
  - (f) Number of years the building has been ENERGY STAR Certified and the last approval date, if applicable.

Nothing in this chapter shall be construed to permit a building owner to use tenant utility usage data for purposes other than compliance with benchmarking report requirements. Nor shall the reporting requirements of this chapter be construed to excuse building owners from compliance with federal or state laws governing direct access to tenant utility data from the responsible utility.

### **9705.2 Quality check of benchmarking report submission.**

The building owner or the owner's authorized representative shall run all automated data quality checker functions available within ENERGY STAR Portfolio Manager, and shall correct all missing or incorrect information as identified by ENERGY STAR Portfolio Manager prior to submitting the benchmarking report to the Department.

**9705.3 Exemptions from benchmarking report submission.** The owner of a building subject to this chapter shall not be required to file a benchmarking report for a reporting year if any of the following conditions apply:

1. The building did not have a Certificate of Occupancy or Temporary Certificate of Occupancy for the entire calendar year required to be benchmarked.
2. The entire building was not occupied, due to renovation, for the entire calendar year required to be benchmarked.
3. The demolition permit for the entire building has been issued, and demolition work has commenced on or before the date the benchmarking report is due for that calendar year.
4. The building did not receive energy or water services for the entire calendar year required to be benchmarked.

For each reporting cycle, the Department shall determine whether an exemption under this subsection applies to a building. Appeal of a determination that a building is not exempt shall be made according to the procedures set forth in Subsection 98.0403.2 of the *Los Angeles Municipal Code*.

**9705.4 Publication of limited summary data.** The Department shall make the following information available to the public on the internet, as reported by building owners, and update the information at least annually:

1. Summary statistics on overall compliance with this chapter.
2. Summary statistics on overall energy and water consumption of buildings subject to this chapter derived from aggregation of annual benchmarking reports.
3. For each building subject to this chapter.
  - (a) Building address and property use type.
  - (b) Annual summary statistics for the whole building derived from the submitted benchmarking report, including all information required under Section 9705.1, except for Item 2(f).
  - (c) The status of compliance with the requirements of this chapter.

## SECTION 9706 ENERGY AND WATER AUDITS AND RETRO-COMMISSIONING

**9706.1 Energy audits and retro-commissioning requirements.** Any building subject to this chapter shall undergo an energy audit and retro-commissioning of the base building systems.

**9706.1.1 Energy audit and retro-commissioning standards.** Energy auditing and retro-commissioning standards shall comply with both of the following:

1. Energy Auditing. Energy audits required by this chapter shall meet or exceed Level II audit standards in conformance with the American Society of Heating Refrigerating and Air-Conditioning Engineers (ASHRAE) *Procedures for Commercial Building Energy Audits* (latest edition at the time the audit is initiated) and shall be performed under the direct supervision of a California licensed engineer or architect.
2. Energy Retro-Commissioning. Energy retro-commissioning shall be performed in accordance with industry standard practices, including ASHRAE Guideline 0.2 *Commissioning Process for Existing Systems and Assemblies*, and under the direct supervision of a California licensed engineer or architect. The retro-commissioning of the base building systems shall include, at a minimum, the following:
  - (a) Heating, ventilation, air conditioning (HVAC) systems and controls.
  - (b) Indoor lighting systems and controls.
  - (c) Water heating systems.
  - (d) Renewable energy systems.

**9706.1.2 Energy audit and retro-commissioning report.** A report of the energy audit and retro-commissioning, completed and signed by a California licensed engineer or architect, shall be maintained by the building owner as required in Section 9707. The report shall meet the requirements of Section 9706.1.1 and shall include, at a minimum, the following:

1. The date(s) that the audit and retro-commissioning were performed.
2. Identifying information on the auditor and retro-commissioning provider.
3. Information on the base building systems and equipment.
4. A list of all retrofit measures that can reduce energy use, and/or cost of operating the building, costs of each measure, and an estimate of the energy savings associated with each measure.
5. All the retro-commissioning process activities undertaken and retro-commissioning measures completed.
6. Functional performance testing reports.
7. Operational training conducted.

8. Acknowledgment that an ASHRAE level II audit was conducted.

**9706.1.3 Exemptions.** An energy audit and retro-commissioning are not required if one of the following conditions is met and proof is submitted to the Department:

1. The building has received ENERGY STAR Certification from the EPA for the year of the building's compliance due date in Section 9708.
2. The building has received ENERGY STAR Certification from the EPA for two of the three years preceding the building's compliance due date in Section 9708.
3. For buildings not eligible to receive an ENERGY STAR score, a California licensed engineer or architect certifies that the energy performance of the building is at least 25 percent better than the median energy performance of similar buildings by comparing against the national source energy data provided in the Commercial Buildings Energy Consumption Survey (CBECS) conducted by the US Energy Information Administration or other relevant national data set as approved by the Department effective at the time of reporting.
4. A California licensed engineer or architect certifies that the building has reduced its weather normalized source energy use intensity as calculated by the benchmarking tool by 15 percent, when compared to 5 years preceding the building's compliance due date in Section 9708.
5. A building which does not have a central cooling system and where four of the following six measures listed in Paragraphs (a) to (f) below were completed within the 5-year compliance cycle being reported in accordance with Section 9708. A report, certified by a California licensed engineer or architect, detailing the measures performed is required.
  - (a) Common area and exterior lighting. Common area (lighting outside of tenant spaces) and exterior lighting fixtures have been installed in accordance with the California Building Standards Code (California Code of Regulations, Title 24) in effect at any time during the 5-year compliance cycle being reported.
  - (b) Pipe insulation. All exposed pipes that are used to convey heat or hot water have been insulated in accordance with the California Building Standards Code (California Code of Regulations, Title 24) in effect at any time during the 5-year compliance cycle being reported.
  - (c) Cool roof. A cool roof has been installed in accordance with the *Los Angeles Green Building Code* and the California Building Standards Code (California Code of Regulations, Title 24) in effect at any time during the 5-year compliance cycle being reported.

- (d) Demand response. The building owner has committed to participate in a utility sponsored demand response program.
  - (e) Solar thermal. A solar water heating system has been installed.
  - (f) Domestic hot water. A new water heater has been installed in accordance with the California Building Standards Code (California Code of Regulations, Title 24) in effect at any time during the 5-year compliance cycle being reported.
6. The building is new and has been occupied for less than 5 years from its first due date, based on its Temporary Certificate of Occupancy or Certificate of Occupancy.

For each reporting cycle, the Department shall determine whether an exemption under this subsection applies to a building. Appeal of a determination that a building is not exempt shall be made according to the procedures set forth in Subsection 98.0403.2 of the *Los Angeles Municipal Code*.

**9706.2 Water audits and retro-commissioning requirements.** Any building subject to this chapter shall undergo a water audit and retro-commissioning of the base building systems.

**9706.2.1 Water audit and retro-commissioning standards.** Water audits and retro-commissioning shall be performed in accordance with industry standard practices, including ASHRAE Guideline 0.2 Commissioning Process for Existing Systems and Assemblies, and under the direct supervision of a California licensed engineer or architect. The water audit and retro-commissioning of the base building systems shall include, at a minimum, the following:

- 1. Potable water distribution systems.
- 2. Landscape irrigation systems.
- 3. Water reuse systems.
- 4. Water features.

**9706.2.2 Water audit and retro-commissioning report.** A report of the water audit and retro-commissioning, completed and signed by a California licensed engineer or architect, shall be maintained by the building owner as required in Section 9707. The report shall meet the requirements of Section 9706.2.1 and shall include, at a minimum, the following:

- 1. The date(s) that the audit and retro-commissioning were performed.
- 2. Identifying information on the auditor and retro-commissioning provider.
- 3. Information on the base building systems and equipment.
- 4. A list of all retrofit measures that can reduce water use, and/or cost of operating the building; costs of each measure; and an estimate of the water savings associated with each measure.

- 5. All the retro-commissioning process activities undertaken and retro-commissioning measures completed.
- 6. Functional performance testing reports.
- 7. Operational training conducted.

**9706.2.3 Exemptions.** A water audit and retro-commissioning are not required if one of the following conditions is met:

- 1. A California licensed engineer or architect certifies that the building has reduced its water use intensity by at least 20 percent when compared to the 5 years preceding the building's due date for compliance.
- 2. The building does not have a central cooling system and two of the three following measures have been installed within 5 years of the due date in Section 9708. A report detailing the measures performed, certified by a California licensed engineer or architect, is required:
  - (a) Low flow faucets and shower heads. All faucets and showerheads within the building have been replaced and meet the *Los Angeles Municipal Code* and the California Building Standards Code (California Code of Regulations, Title 24) in effect at any time during the 5-year compliance cycle being reported.
  - (b) Washing machines. Front-loading clothes washing machines have been installed in all common laundry facilities.
  - (c) Water closets and urinals. All water closets and urinals within the building have been replaced and meet the *Los Angeles Municipal Code* and the California Building Standards Code (California Code of Regulations, Title 24) in effect at any time during the 5-year compliance cycle being reported.
- 3. A California licensed engineer or architect certifies that the building's water use conforms to the requirements of the *Los Angeles Municipal Code* and the California Building Standards Code (California Code of Regulations, Title 24) in effect at any time during the 5-year compliance cycle being reported.
- 4. The building is new and has been occupied for less than 5 years from its first due date, based on its Temporary Certificate of Occupancy or Certificate of Occupancy.

For each reporting cycle, the Department shall determine whether an exemption under this subsection applies to a building. Appeal of a determination that a building is not exempt shall be made according to the procedures set forth in Section 98.0403.2 of the *Los Angeles Municipal Code*.

**9706.3 Required submittal to the department.** The building owner shall submit to the Department a Confirmation of Audit and Retro-Commissioning for each building, or proof of meeting one of the exemptions, subject to this chapter, in accordance with the schedule set forth in Section 9708. The Confirmation of Audit and Retro-Commissioning shall, at a minimum, include the information required under Sections 9706.1.1, 9706.1.2, 9706.2.1 and 9706.2.2.

## **SECTION 9707 RECORD MAINTENANCE**

The building owner shall maintain records related to benchmarking, audits and retro-commissioning, including, but not limited to, the energy and water bills and reports or forms received from tenants and/or utilities. Such records shall be preserved for a period of 5 years. When the building is sold, the records shall be given to the new building owner.

## **SECTION 9708 SCHEDULE FOR COMPLIANCE**

**9708.1 Schedule for benchmarking report compliance.** (Amended by Ord. No. 185,198, Eff. 11/22/17.) An annual benchmarking report in compliance with Section 9705 shall be submitted to the Department according to the following schedule:

1. For buildings owned by the City with gross floor area of 7,500 square feet (697 m<sup>2</sup>) or more, the owner must complete and submit the initial benchmarking report on or before December 1, 2017, and annually no later than June 1 thereafter.
2. For a privately owned building or a building owned by a local agency of the State with gross floor area of 100,000 square feet (9290 m<sup>2</sup>) or more, the owner must complete and submit the initial benchmarking report on or before December 1, 2017, and annually no later than June 1 thereafter.
3. For a privately owned building or a building owned by a local agency of the State with gross floor area of 50,000 square feet (4645 m<sup>2</sup>) or more but less than 100,000 square feet (9290 m<sup>2</sup>), the owner must complete and submit the initial benchmarking report on or before June 1, 2018, and annually no later than June 1 thereafter.
4. For a privately owned building or a building owned by a local agency of the State with gross floor area greater than 20,000 square feet (1858 m<sup>2</sup>) but less than 50,000 square feet (4645 m<sup>2</sup>), the owner must complete and submit the initial benchmarking report on or before June 1, 2019, and annually no later than June 1 thereafter.

**9708.2 Schedule for audits and retro-commissioning report compliance.** Compliance with Section 9706 shall be due once every 5 years, as provided in Table 9708.2 based on the last number of the Los Angeles County Assessor's Identification Number (AIN) for each building subject to this chapter under Section 9703.

**TABLE 9708.2**

<b>Last digit of AIN</b>	<b>First Compliance Due Date</b>	<b>Subsequent Compliance Due Dates</b>
0	January–June, 2021	Every 5 years thereafter
1	July–December, 2021	Every 5 years thereafter
2	January–June, 2022	Every 5 years thereafter
3	July–December, 2022	Every 5 years thereafter
4	January–June, 2023	Every 5 years thereafter
5	July–December, 2023	Every 5 years thereafter
6	January–June, 2024	Every 5 years thereafter
7	July–December, 2024	Every 5 years thereafter
8	January–June, 2025	Every 5 years thereafter
9	July–December, 2025	Every 5 years thereafter

### **9708.2.1 Timing of audit and retro-commissioning.**

Except as otherwise provided in Section 9708.3, the audits and retro-commissioning shall be completed no earlier than 5 years prior to a building's compliance due date.

**9708.3 Time extensions.** A building owner may be granted an extension of time to file any submittal required by this chapter provided satisfactory proof that one of the following conditions applies:

1. The building is under temporary financial or legal distress, as verified by recent financial statements, legal filings and other relevant documents showing one or more of the following:
  - (a) The building is under the control of a court-appointed receiver as a result of financial distress.
  - (b) The building is owned by a financial institution as a result of borrower default.
  - (c) The building has been acquired by a financial institution via deed in lieu of foreclosure.
  - (d) The building is encumbered by a senior mortgage subject to a notice of default.
  - (e) The building is an asset subject to probate proceedings.
  - (f) The building was subject to property tax arrearages that resulted in the building's inclusion, within the prior 2 years, on the Los Angeles County annual tax lien sale list.
  - (g) The building is subject to a State of California Board of Equalization (BOE) Welfare Property Tax Exemption and the cost of complying with reporting requirements will exceed or significantly deplete existing cash flow. Proof of a BOE-issued Organizational Clearance Certificate and, where the building owner is a limited partnership, a Supplemental Clearance Certificate must be shown.
2. The building is a residential building currently in the Rent Escrow Account Program (REAP) and compli-

ance with this chapter will materially interfere with compliance with REAP.

3. The owner is unable to timely comply due to a substantial hardship, as determined by the Department.

**9708.4 Notification.** For buildings with compliance dates of January 1, 2018, or later, the Department shall notify the owner of each building subject to the scope of this chapter at least 6 months prior to the due dates specified in Sections 9708.1 and 9708.2.

#### **SECTION 9709 NONCOMPLIANCE FEE**

Failure to comply with this chapter shall subject the owner to noncompliance fees as specified in Section 98.0411 of the *Los Angeles Municipal Code*, except that the amount of the noncompliance fee shall be \$202.

#### **SECTION 9710 SUBMITTAL FEES**

The owner shall pay to the Department the following fees for each building:

**9710.1 Annual disclosure compliance fee.** The Department shall charge the owner a fee in the amount of \$61.00 for each Annual Benchmarking Report submitted to the Department.

**9710.2 Audit and retro-commissioning compliance fee.** The Department shall charge the owner a fee in the amount of \$183.00 for each submittal of a Confirmation of Audit and Retro-Commissioning to the Department.

#### **SECTION 9711 BUILDING AND SAFETY DEVELOPMENT SURCHARGE**

There shall be added to the total of all fees imposed under this chapter a surcharge in the amount equal to the greater of 6 percent of the fee or one dollar. All monies received from this surcharge shall be deposited to and expended as the "Building and Safety Systems Development Account" of the Department of Building and Safety Building Permit Enterprise Fund pursuant to Section 5.121.8 of the *Los Angeles Administrative Code*.

#### **SECTION 9712 SEVERABILITY**

If any provision of this ordinance is found to be unconstitutional or otherwise invalid by any court of competent jurisdiction, that invalidity shall not affect the remaining provisions of this ordinance, which can be implemented without the invalid provisions and, to this end, the provisions of this ordinance are declared to be severable. The City Council hereby declares that it would have adopted each and every provision and portion thereof not declared invalid or unconstitutional, without regard to whether any portion of the ordinance would subsequently be declared invalid or unconstitutional.



**EXCERPTS  
FROM RELATED LOS ANGELES CITY CODES  
LOS ANGELES MUNICIPAL CODE**

**Chapter II, Article 8**

**SECTION 28.10  
BALLOON-USE FOR ADVERTISING**

No person shall release or allow the release of any free balloon, toy balloon or any group of the same which has attached thereto any substance, matter or material used, designated or intended for any advertising purpose.

**SECTION 28.11  
CAPTIVE BALLOONS AND SIMILAR DEVICES**

It shall be unlawful to permit a balloon or similar device which floats in the air and is restrained, attached or held in place by a cord, rope, cable or similar means, to float, ascend, rise or remain aloft at a vertical height of 5 feet or more above the surface of the ground measured to the highest point of the balloon or similar device.



## Chapter IX, Article 6

### DIVISION A — MISCELLANEOUS

#### SECTION 96.02

##### EXCAVATING, DEPOSITING, DUMPING – EARTH, SAND, GRAVEL, ETC. – WHERE PROHIBITED

- (a) No person shall, upon any private property within any residence district as described in the zoning laws of this city, dig, excavate, separate, screen or dredge for sand, gravel, earth, rock, stone, minerals, or any other substance so as to cause sand, dust or dirt to be either blown or deposited over and upon the inhabited premises of others or across or upon any public way, and no person shall, in connection with any such operation, cause loud noises by the use of steam shovels, tractors, trucks or other power machinery to be made, to the annoyance of occupants of adjacent or nearby habitations.
- (b) No person shall, upon any private property within any residence district, as described in the zoning laws of this city, dump or deposit, to a level above the official grade of an abutting street, any loose earth, sand, gravel or any other similar material so as to cause or result in sand, dust or dirt being blown over and upon the inhabited premises of others, or across any public way, or so as to cause or allow such materials to be washed or eroded over and upon the premises of another or upon any public way.
- (c) The foregoing prohibitions shall not apply to work necessary for the erection or alteration of a building or structure pursuant to a valid building permit issued therefor under the provisions of Article 1 of Chapter 9 of this code; nor to improvement work done pursuant to a plan for subdividing and improving land carried out as contemplated by Ordinance No. 79,310, nor to work done pursuant to an express permit therefor issued under Article 4 of Chapter 6 of this code or under any other ordinance of this city. Provided, however, that no person shall claim the benefit of this exception who does not, diligently and without unnecessary or unreasonable delay, prosecute such exempted improvement work to completion, in a manner calculated to avoid undue annoyance to the occupants of nearby habitations.
- (d) No person shall dump, deposit, move or place any earth, sand, gravel, rock, debris or other material, or maintain, permit or allow the same to remain in a condition so as to create the danger, possibility or probability that the same will roll, slip, slide, erode, flow or wash upon or over any public, or privately owned property without prior written consent of the owner thereof, or upon or over any public place, highway, street, alley or way.
- (e) No person shall, when hauling any earth, sand, gravel, rock, stone, debris, paper or any other substance over

any public street, alley or other public place, allow such materials to blow or spill over and upon the public street, alley or other public place or adjacent private property.

- (f) No person shall, when excavating, compacting, hauling or moving earth, sand, gravel, rock, stone, debris, or any other similar substance, cause, allow, or permit any mud, earth, sand, gravel, rock, stone, debris or other substance to drop, be deposited, or fall from the body, tires, or wheels of any vehicle so used upon any public street or alley without immediately and permanently removing the same therefrom.

#### SECTION 96.05

##### DECLARING CERTAIN AREA SUBJECT TO INUNDATION AND PROHIBITING CONSTRUCTION OF CERTAIN BUILDINGS THEREIN

- (a) Every part and portion of that territory hereinafter described, which constitutes a part of the area known as Laguna-Dominguez area, and located within the corporate limits of the City of Los Angeles, which is less than fifteen and one-half feet elevation above sea level, United States Geological Survey, is hereby declared to be subject to inundation, and is, therefore, declared to be unfit for human habitation. Said territory is more particularly described as follows:

Beginning at the intersection of the easterly prolongation of the center line of that portion of One Hundred Seventieth Street (in the City of Gardena) extending westerly from Vermont Avenue with the westerly boundary of the City of Los Angeles as said boundary existed January 1, 1942; thence southerly along said westerly boundary of the City of Los Angeles in its various courses to the northeasterly prolongation of the center line of that portion of One Hundred Eighty-second Street tending southwesterly from Vermont Avenue; thence northeasterly along said last-mentioned northeasterly prolongation to the center line of Vermont Avenue; thence southerly along said last-mentioned center line in its various courses to the westerly prolongation of the southerly line of Lot 109, McDonald Tract, as per map recorded in Book 15, pages 21 and 22, Miscellaneous Records of Los Angeles County; thence easterly along said last-mentioned prolongation and said last-mentioned southerly line to a point in the northerly prolongation of the westerly line of Lot 75 of Tract No. 4671, as per map recorded in Book 56, pages 30 and 31 of Maps, Records of said County; thence southerly along said last-mentioned northerly prolongation to the center line of One Hundred Ninetieth Street; thence northeasterly long said last-mentioned center line to the northerly prolongation of the center line of that portion of Hamilton Street extending southerly from One Hundred Ninetieth Street;

thence southerly along said last-mentioned northerly prolongation to the southeasterly boundary line of the City of Los Angeles as said boundary existed January 1, 1942; thence northeasterly along said last-mentioned boundary of the City of Los Angeles and continuing along said boundary to the easterly prolongation of the center line of that portion of One Hundred Eighty-ninth Street extending westerly from Figueroa Street; thence westerly along said last-mentioned easterly prolongation and along said center line of One Hundred Eighty-ninth Street to the southerly prolongation of the westerly line of Lot 8, M. E. Woods Gardena Tract, as per map recorded in Book 10, page 172 of Maps, Records of said County; thence northerly along said last-mentioned southerly prolongation and said westerly line of Lot 8 to the northwesterly corner thereof; thence southwesterly along the southeasterly line of Lot 21 of Stimson Bros. Resubdivision of Farm Lots 18 and 19 South Gardena Tract, as per map recorded in Book 52, page 98, Miscellaneous Records of said County, to the most southerly corner of said Lot 21; thence northerly along the westerly line of said Lot 21 and the northerly prolongation thereof to the center line of One Hundred Eighty-fourth Street; thence southwesterly along said last-mentioned center line to the southerly prolongation of the westerly line of Lot 27, said Stimson Bros. Resubdivision of Farm Lots 18 and 19, South Gardena tract; thence northerly along said last-mentioned southerly prolongation and said westerly line and the northerly prolongation thereof to the easterly prolongation of the hereinbefore

mentioned center line of One Hundred Seventieth Street; thence westerly along said last-mentioned easterly prolongation to the point of beginning.

- (b) No building or portion thereof which is designed for residential purposes or as a place of public assembly as hereinafter described, or for both, may be constructed, and no existing building may be altered so as to be used either in whole or in part for such use, upon any part or portion of the premises described in Subdivision (a) hereof, which is less than fifteen and one-half feet elevation above sea level, United States Geological Survey.
- (c) A “place of public assembly”, as used in Subdivision (b) hereof means and includes every place designed for or used for the congregation or gathering of twenty (20) or more persons, whether such gathering be of a public, restricted, or private nature. Assembly halls, churches, schools, auditoriums, recreation halls, pavilions, places of amusement, dance halls, opera house, motion picture theatres, and the like, are included within this term.
- (d) No permit shall be issued by any officer or employee of the city for the doing of any act for which such permit is required by any provision of this chapter when such act, if performed, would constitute a violation of this section.

## DIVISION C — FABRICATOR APPROVALS

### SECTION 96.200 STATEMENT OF PURPOSE

If it is the purpose of this division to safeguard the life, health, property and general welfare of the people of this city by regulating work performed at locations other than construction sites which work, if performed at such construction sites, would be subject to certain inspection requirements of the *Los Angeles Municipal Code*.

### SECTION 96.201 DEFINITIONS

The following terms are defined for purposes of this division.

**DEPARTMENT.** The Department of Building and Safety of the City of Los Angeles.

**GENERAL MANAGER.** The General Manager of the department.

**PERSON.** Any natural person and any firm, association, partnership, corporation or other business entity.

**TYPE I FABRICATOR.** A person who, at a place or location other than the site of a particular building or structure to be erected or under construction in the City of Los Angeles, performs work which:

1. If performed at such construction site would be subject to the inspection requirements of Section 1704 of the *Los Angeles Municipal Code*; or
2. Is required by a provision of Article I, Chapter IX, of the *Los Angeles Municipal Code* to be performed by a Type I Fabricator.

**TYPE II FABRICATOR.** Any person who, at the place or location other than the site of a particular building or structure to be erected or under construction in the City of Los Angeles, performs work which if performed at the construction site would be subject to the inspection requirements of Sections 108, 93.0304, 94.103.5, or 95.116 of the *Los Angeles Municipal Code*.

**APPROVAL.** A written authorization issued to Type I and Type II Fabricators pursuant to the provisions of this division containing the name of the fabricator and the exact facility or physical plant where the work that is subject to these provisions will be performed.

### SECTION 96.203 SCOPE AND EFFECT OF APPROVALS

An approval issued pursuant to this division shall constitute authorization for the persons named in the approval to perform work as Type I or Type II Fabricators at the locations designated in the approval and shall constitute authorization to utilize the work so produced without the inspections which, if the work were performed at the construction site of a building or structure in the City of Los Angeles, would be required by Sections 108, 1701, 93.0304, 94.135.0 and

95.116 of the *Los Angeles Municipal Code*, provided, however that any Type I Fabricator who performs work described in Section 1701.9 of the *Los Angeles Municipal Code* shall not be exempt from the inspection requirements of that subsection.

No approval issued pursuant to the provisions of this division shall be construed as authority to violate any law or regulation applicable in the City of Los Angeles, nor shall any approval be construed as having any effect whatsoever upon the laws or regulations of the State of California applicable to contractors.

### SECTION 96.204 ISSUANCE OF APPROVALS – PROCEDURES

- (a) **Applications.** Applications for initial approvals shall be made on forms provided by the department, which forms shall include a statement that the applicant agrees to pay all inspection charges imposed pursuant to Subsection (i) of this section. No application will be accepted unless accompanied by the appropriate fee as hereinafter set forth, which fee is unrelated to the inspection charges imposed pursuant to Subsection (i) of this section.
- (b) **Fees.** A fee of \$1207.00 shall accompany each application for approval and a renewal fee of \$905.00 shall accompany each application for renewal. A fee of \$679.00 shall be charged for the approval of each branch plant and shall be in addition to fees required for the main fabricator plant.

A renewal fee of \$264.00 shall be charged for the renewal of each branch plant in addition to the main fabricator plant. A fee of \$679.00 shall accompany each application for a major modification (includes changes in a quality control system or key management personnel) and a fee of \$226.00 shall accompany each application for a clerical modification.

A fee of \$377.00 shall accompany each request for acceptance of a material fabricated by an unauthorized fabricator. This request will be accepted only once from any individual fabrication company. Inspection and travel charges shall be the same as those charged to an applicant seeking to become an authorized fabricator.

**Exception:** An unauthorized fabricator who has filed a complete and acceptable application and submittal requesting to become an authorized fabricator and has paid the application fee may submit additional requests provided:

1. A separate application is made for each request, and
2. A fee of \$362.00 accompanies each request.

The fees for approval of new fabricators include four hours of departmental processing time.

The fees for major modifications of fabricators, and for approval of a branch plant include four hours of departmental processing time. The fees for a material fabricated by an unauthorized fabricator includes two hours of departmental processing time. The fees for renewals and minor modifications include three hours and one and one-half hours, respectively, of departmental processing time.

The applicant shall agree in writing as part of the application, to pay supplemental fees at the rate of \$113.00 per hour to cover the time of processing that is in excess of the time provided for in the approval, renewal or modification fee specified in this section. Processing shall include those activities directly related to the approval of fabricators for which an application has been made and shall include all research, review, investigation, plant inspection, travel, correspondence, clerical and consultation time pertinent to the application. The department may require an estimated supplemental fee to cover the cost of time and travel expense to be paid at the time of filing the application and/or before any travel to plants outside of the State of California. However, the applicant shall pay the supplemental fee in full prior to final action on the application by the department.

The fees specified in this section, including supplemental fees, and application fees are not refundable once work has been performed by the department, regardless of whether the action taken is approval or denial.

**Exception:** Supplemental fees paid in advance, which are in excess of the total actual fees, may be refundable.

- (c) **Duration of approval.** Any approval issued pursuant to the provisions of this division shall remain valid for a period of one year from the date of issuance thereof unless revoked by the department pursuant to the provisions of this division.
- (d) **Investigation of application.** The General Manager shall investigate every application submitted pursuant to Subsection (a) of this section to determine whether the applicant possesses qualifications sufficient to justify the issuance of the requested approval. In making this determination the General Manager may consider the experience, education and training of the applicant and his employees; the quality control standards maintained by the applicant; the equipment and facilities of the applicant; and the physical plant which will be designated in the requested approval if the same is issued. The General Manager may also consider any other factors pertaining to the manufacturing processes of the applicant as he may, in the reasonable exercise of his discretion, deem to be relevant.
- (e) **Action upon applications.** If it is determined that an applicant possesses qualifications sufficient to justify the issuance of the requested approval, the department shall issue the same to the applicant. If a contrary determination is made, the application shall be denied

and the department shall notify the applicant of that action. Such notification shall be in writing and shall specify the reasons for the denial. Initial applications will expire 12 months after the filing date if the request for approval of a fabricator has not been cleared of corrections and approved. No approval shall be issued until the application is refiled and a new fee paid.

**Exception:** The department or the board may grant extensions of time if an applicant submits in writing sufficient evidence that unusual conditions or circumstances precluded the approval within the allocated time.

- (f) **Conditional approvals.** The department may impose reasonable conditions precedent upon the issuance of approvals and may include in any approval special conditions deemed necessary to ensure that the work to be performed under such approval will comply with the provisions of Chapter IX of the *Los Angeles Municipal Code*. Such special conditions may include, but are not limited to, special quality control procedures and requirements for specific identification of particular materials. Any special conditions included in an approval shall impose mandatory duties on the fabricator to comply therewith.
- (g) **Rules and regulations.** The General Manager shall establish such rules and regulations as he may deem appropriate relative to the following:
  1. The implementation of the investigatory duties imposed upon him by Subsection (d) of this section;
  2. The maintenance of standards applicable to the facilities, equipment, employees and physical plants of approved fabricators.
  3. Such other matters as are within the scope of this division.
- (h) **Inspections.**
  1. The General Manager of the department shall cause to be made such inspections of a fabricator's facilities, equipment, procedures, materials and construction sites upon delivery of fabricated products as, in the reasonable exercise of discretion, shall be deemed necessary to carry out the purpose of this division. Such inspections may consist of any or all of the following:
    - Initial inspections.** Inspections conducted prior to the issuance of an approval for which an application has been made.
    - Annual inspections.** In-plant inspection at least once a year.
    - Periodic monitoring inspections.** Unannounced in-plant inspections of the premises of a fabricator to whom an approval has been issued.

**Job inspections.** On-site or in-plant inspection of fabricated material to be used at construction sites within the city.

**Requested inspections.** Inspections conducted at the specific written request of a fabricator at a prearranged time and inspections conducted of fabricated material of an unlicensed fabricator.

2. All in-plant inspections of fabrication facilities will be performed by department personnel, except that an initial inspection conducted prior to the issuance of a Type I approval applicable to facilities situated more than 60 miles from the Los Angeles City Hall may, at the election of the applicant, be performed by an approved testing agency. Such inspection by an approved testing agency, however, will not preclude such further investigation relative to the application as the General Manager of the department, pursuant to Subsection (d) hereof, may deem necessary.
- (i) **Inspection charges.**
1. Whenever an inspection is conducted by department personnel at facilities located more than 60 air miles from the Los Angeles City Hall, whether such inspection be conducted pursuant to Subsection (d) or Subsection (h) of this section, or both, the fabricator shall reimburse the City of Los Angeles for the cost thereof in accordance with the following:
    - A. **Automobile travel.** Mileage at the city rate per mile for all miles driven, both ways, between a point 60 miles from Los Angeles City Hall to the facilities where the inspection is to be conducted, plus \$98.00 per hour for all inspection and travel time for each inspector required.
    - B. **Air travel.** The coach-class fare of a regularly scheduled airline from and to Los Angeles International Airport and the airport closest in proximity to the facilities to be inspected; the cost of motor vehicle transportation to and from such airport and such facilities; inspection and travel time at the rate of \$98.00 per hour for each inspector required.
    - C. **Per diem.** Per diem at the rate of \$52.00 per day for inspections requiring more than eight hours of combined travel and inspection time. The cost of lodging and meals required during the combined travel and inspection time.
  2. Whenever periodic monitoring inspections, requested inspections, or job inspections are conducted by department personnel at facilities or sites 60 air miles or less from the Los Angeles City Hall, the fabricator shall pay the City of Los Angeles a fee of \$98.00 per inspection, per inspector, plus \$98.00 per hour for all inspection and travel time in excess of one hour.

3. The department may require an estimated travel expense fee to be paid prior to inspection. The initial application for approval, and the renewal application, shall include a statement that the applicant agrees to pay all inspection charges imposed pursuant to this subsection.

- (j) **Notification.** Prior to fabrication of products to be used within the city, the licensed fabricator shall notify the department of all fabrication schedules and delivery dates.
- (k) **Identification.** All fabricated products to be used within the city shall be identified in a manner acceptable to the department.

## SECTION 96.205 SUSPENSION AND REVOCATION OF APPROVALS

- (a) **Ground.** An approval issued pursuant to the provisions of this division may be suspended or revoked upon the following grounds:
  1. The performance of work for which the approval was issued which fails to comply with the applicable provisions of Chapter IX of the *Los Angeles Municipal Code*.
  2. Failure of the fabricator to satisfy any condition of the approval, or to comply with applicable rules and regulations established pursuant to Subsection (g) of Section 96.204 of this code.
  3. Any of the reasons specified in Section 98.0202 of the *Los Angeles Municipal Code*.

In addition to the foregoing, any approval may be temporarily suspended for failure to reimburse the City of Los Angeles for inspection costs as required by Subsection (i) of Section 96.204 of this division.





# DIVISION D — REPORT OF RESIDENTIAL PROPERTY RECORDS AND PENDING AND RECORDED LIENS

## SECTION 96.300 INTENT

Pursuant to Article 6.5 (commencing with Section 38780) of Chapter 10, Part 2, Division 3, Title 4, of the *California Government Code*, it is the intent of the Council of this city to assure that the purchasers of residential property within the city are furnished with reports of matters of city record pertaining to the authorized use, occupancy and zoning classification of residential property prior to sale or exchange. It is further the intent of the City Council to assure that purchasers of residential property within the city are furnished with reports of certain pending special assessment liens listed below; information regarding the installation of metal bars, grilles, grates, security roll-down shutters, and similar devices over emergency escape windows in sleeping rooms; smoke detectors; impact hazard glazing; water conservation devices; seismic gas shutoff valves; certificates of occupancy and sewer permits.

## SECTION 96.301 DEFINITIONS

For the purposes of this division:

- (a) “**Owner**” shall mean any person, partnership, association, company, corporation or fiduciary in whom or which is vested legal title to residential property as defined herein, or who or which possesses the power to convey legal title to such residential property.
- (b) “**Residential property**” shall mean:
  - (1) Any real property improved with one or more buildings or structures which in whole or in part are used for or are legally permitted to be used for dwelling units or guest room purposes.
  - (2) Any vacant real property located in a zone wherein dwelling or guest room uses are legally permitted.
- (c) “**Agreement of sale**” shall mean any agreement, reduced to writing, which provides that legal title of any real property shall thereafter be conveyed from one owner to another.
- (d) “**Brush abatement**” shall mean those proceedings initiated by the city under the authority of Title 4, Division 3, Part 2, Chapter 13, of the Government Code of the State of California, where the Fire Department has determined that a fire hazard exists by reason of the presence upon real property of brush which the City Council may order removed under the authority of the above-mentioned chapter of the Government Code.

## SECTION 96.302 REPORTS REQUIRED

Prior to entering into an agreement of sale or contracting for an exchange of any residential property, or, where an escrow agreement has been executed in connection therewith, prior to close of escrow, the owner or his agent shall obtain from the Department of Building and Safety a report of the Superintendent of Building and a report of the City Engineer; said reports, containing the information specified in Section 96.304 of this code.

## SECTION 96.303 APPLICATION

Upon written application by the owner or the owner’s agent to the Department of Building and Safety on forms provided by the city and the payment of a fee specified herein to the Department of Building and Safety, the Superintendent of Building and the City Engineer shall review the appropriate city records. This application shall contain the name and address of the owner, the legal description, the county assessor’s map book page and parcel number and, if available, the street address of the residential property for which the reports are sought.

The application for the report regarding a sale or exchange of a residential property shall not be accepted by the Department of Building and Safety until such time as the applicant provides the Department of Building and Safety with one of the following:

1. A declaration under penalty of perjury by the owner certifying that in the residential property for which the report is sought:
  - (a) Smoke detectors have been installed in accordance with the *Los Angeles Municipal Code*, Section 918603; and
  - (b) Impact hazard glazing has been installed in accordance with *Los Angeles Municipal Code*, Section 6101; and
  - (c) Water-conservation devices have been installed in accordance with *Los Angeles Municipal Code*, Section 122.03;
  - (d) Metal bars, grilles, grates, security roll-down shutters, and similar devices over emergency escape windows in sleeping rooms have been installed in accordance with *Los Angeles Municipal Code*, Section 6304.3; and
  - (e) Lights and locks have been installed in accordance with Section 8607 of the *Los Angeles Municipal Code*; and

- (f) Seismic gas shutoff valves has been installed in accordance with Section 94.1219.
- 2. A declaration under penalty of perjury by the owner certifying that in the residential property for which the report is sought:
  - (a) Smoke detectors will be installed in accordance with the *Los Angeles Municipal Code*, Section 8603; and
  - (b) Impact hazard glazing will be installed in accordance with the *Los Angeles Municipal Code*, Section 6101.

The owner shall further certify that such smoke detectors and/or impact hazard glazing will be installed prior to entering into an agreement of sale or contracting for an exchange of a residential property, or, where an escrow agreement has been executed in connection therewith, prior to close of escrow, and that within ten days after the smoke detectors and/or impact hazard glazing is/are installed he/she will so advise the Department of Building and Safety in writing; and

- (c) Water conservation devices will be installed in accordance with *Los Angeles Municipal Code*, Section 122.03;
- (d) Metal bars, grilles, grates, security roll-down shutters, and similar devices over emergency escape windows in sleeping rooms will be installed in accordance with *Los Angeles Municipal Code*, Section 6304.3; and
- (e) Lights and locks will be installed in accordance with Section 8607 of the *Los Angeles Municipal Code*; and
- (f) Seismic gas shutoff valves will be installed in accordance with Section 94.1219.
- 3. A declaration under penalty of perjury by the buyer certifying that in the residential property for which the report is sought:
  - (a) Smoke detectors will be installed in accordance with the *Los Angeles Municipal Code*, Section 8603; and
  - (b) Impact hazard glazing will be installed in accordance with the *Los Angeles Municipal Code*, Section 6101.

The buyer shall further certify that such smoke detectors and/or impact hazard glazing will be installed within 30 days after entering into an agreement of sale or contracting for an exchange of a residential property, or, where an escrow agreement has been executed in connection therewith, within 30 days after close of escrow, and that within 10 days after the smoke detectors and/or impact hazard glazing is/are installed he/she will so advise the Department of Building and Safety in writing; and

- (c) Water conservation devices have been installed in accordance with *Los Angeles Municipal Code*, Section 122.03;
- (d) Metal bars, grilles, grates, security roll-down shutters, and similar devices over emergency escape windows in sleeping rooms have been installed in accordance with *Los Angeles Municipal Code*, Section 6304.3; and
- (e) Lights and locks have been installed in accordance with Section 8607 of the *Los Angeles Municipal Code*.
- (f) Seismic gas shutoff valves will be or have been installed in accordance with Section 94.1219.
- 4. The Department of Building and Safety shall deliver to the applicant, either in person or by mail, the reports required within 15 calendar days after the date of the acceptance of the application.
- 5. The owner must also provide a declaration under penalty of perjury that he or she has inspected the property for the existence of protected trees and the number of protected trees, if any, located on the subject property. For the purposes of this section, the definition of “protected tree” set forth in Section 46.01 this code shall apply. The declaration shall also authorize the Bureau of Street Services within the Department of Public Works to verify this information by entry upon the subject property. A fee may be collected for any inspection required to verify the declaration. The fee shall be determined and adopted in the same manner as provided in Section 12.37 I.1. of this code for establishing fees.

## SECTION 96.304 CONTENTS OF REPORTS

- (a) **Report of superintendent of building.** The report of the Superintendent of Building shall contain the following information so far as it is available in the records of the Department of Building and Safety:
  - (1) The zoning classification of the property in question.
  - (2) The authorized occupancy and use of the subject property as shown by building permits or certificates of occupancy of record.
  - (3) Existing orders or the estimated amount of pending assessments of record which are the result of the Superintendent of Building having awarded a contract for the demolition of buildings or structures upon the subject residential property which demolitions were ordered to be performed by the Superintendent of Building under the provisions of the *Los Angeles Municipal Code*.
  - (4) The declaration made pursuant to the provisions of Section 96.303 of this code.

- (5) A copy of any Certificate of Occupancy issued with respect to the subject property pursuant to Section 0307 of the *Los Angeles Municipal Code*.
  - (6) A listing of all document and reference numbers written or printed directly on the individual lot for which the report is requested as shown on the Zoning Map maintained by the Department of Building and Safety.
  - (7) Any current resolution by the City Council placing the property into the Rent Escrow Account Program of the City of Los Angeles. Notice of this resolution shall also be filed in the Office of the County Recorder.
- (b) **City engineer reports.** The City Engineer report shall contain the following information:
- (1) An estimate of pending assessment liens on residential properties for public maintenance of private streets. Such estimate shall be provided upon determination of the cost of correcting any hazardous condition upon a private street whenever such corrective work is ordered by the Board of Public Works pursuant to the provisions of Section 65.13 of this code.
  - (2) An estimate of pending special assessment liens for public improvements proposed under assessment procedures authorized by State law for which an ordinance of intention has been adopted by the City Council of this City.
  - (3) Pending special assessment liens for weed clearance originating under the provisions of Title 4, Division 3, Part 2, Chapter 13 of the Government Code of the State of California.
  - (4) Notices of record to repair sidewalks issued by the Department of Public Works under the authority of Chapter 22 of Part 3 of Division 7 of the Streets and Highways Code of the State of California.
  - (5) Existing orders or notices of record received by the Department of Public Works from the Fire Department requesting the initiation of proceeding for brush abatement under the provisions of Title 4, Division 3, Part 2, Chapter 13, of the Government Code of the State of California.
  - (6) All recorded assessment liens as known to the City Engineer except for street lighting maintenance assessment liens.
  - (7) Whether or not a house sewer connection permit has been issued pursuant to Section 64.12 of the *Los Angeles Municipal Code*.
  - (8) Notices of making of application for essential public utilities assessments pursuant to Chapter 8 of Division 6 of the *Los Angeles Administrative Code*, which have not yet been acted upon by the City Council, or, if acted upon, have

resulted in an assessment lien which is not yet delinquent.

### **SECTION 96.305 FEE FOR REPORTS**

Every owner or agent for the owner, who applies for a Report of Residential Property Records and Pending Special Assessment Liens shall pay to the Department of Building and Safety a fee therefor in the sum of sixty-five dollars (\$65.00). Of this amount, eighteen dollars (\$18.00) shall be credited to the department's receipts of the Bureau of Engineering, Department of Public Works, and the balance shall be credited to the department receipts of the Department of Building and Safety.

### **SECTION 96.306 EFFECTIVE PERIOD OF REPORT**

No new report need be obtained by a owner for a residential property for a period of six months after the issuance of a report under the provisions of this division. During said six-months period the city may notify the applicant, at no extra charge to him, of new information of city record that makes the original report obsolete.

### **SECTION 96.307 DELIVERY OF THE REPORT**

The reports of the Superintendent of Building and the City Engineer shall be delivered by the owner or his agent to the buyer or transferee of the subject residential property prior to entering into an agreement of sale or exchange of said property. Except that where in connection with said sale or exchange an escrow agreement has been executed, the seller or his agent may transmit said reports to the escrow agent with an instruction that said agent present these reports to the buyer or transferee prior to close of escrow, or may instruct the escrow agent to obtain said reports pursuant to the provisions of Section 96.303 and 96.305 of this code and present them to the buyer or transferee prior to close of escrow.

### **SECTION 96.308 EXCEPTIONS**

The provisions of the division shall not apply to:

- (a) Property exempt from taxation under the Documentary Transfer Tax Act of the State of California.
- (b) The first sale of a residential building or condominium located in a subdivision whose final map has been approved and recorded in accordance with the Subdivision Map Act not more than two years prior to the first sale. Provided, however, that such exception shall not apply to a condominium created in a condominium conversion project, as said terms are defined in Section 12.03 of this code.

**SECTION 96.309**  
**NON-COMPLIANCE NOT TO INVALIDATE**  
**SALE OR EXCHANGE: EXCEPTION**

No sale or exchange of residential property subject to the provisions of this division shall be invalidated because of the failure of any person responsible for furnishing the report required by this division to furnish such report unless such failure is an act or omission which would be sufficient ground for the rescission of such sale or exchange in the absence of this division.

**SECTION 96.309.1**  
**INFORMATION FURNISHED**  
**AS GROUND FOR RESCISSION**

Any contract for the sale or exchange of residential property subject to the provisions of this division, including escrow-contracts, shall not be invalidated as a result of the information furnished in said report unless it reveals a material misrepresentation or concealment by the owner or unless it reveals a material mistake by both owner and prospective buyer or transferee which would justify a rescission of the sale or exchange in the absence of this division. Should such report reveal such misrepresentation, concealment, or mistake, the sale or exchange may be rescinded or cancelled at the option of the buyer or transferee.

## Chapter IX, Article 8

# GENERAL ADMINISTRATIVE PROVISIONS

### SECTION 98.0103 DEFINITIONS

- (a) **General.** For the purpose of this article, certain words and terms are defined as follows:

**BOARD.** The Board of Building and Safety Commissioners of the City of Los Angeles.

**BOARD OF EXAMINERS.** Any examining board regularly appointed by the Board of Building and Safety commissioners or the Superintendent.

**CODE.** *Los Angeles Municipal Code.*

**E-PERMITS.** Any Express Permits issued via facsimile or Internet.

**EXAMINER.** A member of an examining board as hereinafter provided for, or any person designated by the board or the Superintendent to conduct any hearing provided for in this article.

**EXPRESS PERMITS.** Any Building, Electrical, Mechanical or Plumbing permits that do not require plans pursuant to Section 91.106.3.2.2 of this code.

**LICENSE.** A certificate, registration, license, authority or approval given or issued by the department pursuant to the provisions of this code.

**LICENSEE.** The holder of any license as the word "license" is defined in this article.

**SUPERINTENDENT OF BUILDING OR SUPERINTENDENT.** The General Manager of the Department of Building and Safety of the City of Los Angeles, or his duly authorized representative.

**DEPARTMENT.** The Department of Building and Safety.

**PARTY.** Includes the board, the department, the respondent, and any other person who has an interest or estate in a proceeding under this article.

**RESPONDENT.** Any person against whom an accusation is filed pursuant to this article.

**PERMIT.** An approved application for the inspection of any work accomplished on or in buildings, structures or sites regulated by Chapter 9 of the *Los Angeles Municipal Code*, but shall not include an application for inspection to obtain a Certificate of Inspection and Permit to Operate.

**PLAN CHECK.** The review of plans, specifications, and/or details required as condition prior to the issuance of a permit.

**PROCEEDING.** Any process relative to a hearing as provided in this article.

**SLIGHT MODIFICATION.** A waiver, granted by the Superintendent or the board, of the strict requirements of

the provisions of Chapter 9 or Chapter I, Article 2 of the *Los Angeles Municipal Code*.

Where the word "Examiner" or "Hearing Examiner" appears hereinafter, the words "Board of Examiners" may be substituted.

### SECTION 98.0105 INSPECTIONS

- (a) Whenever it is necessary to make an inspection to enforce any of the provisions of or perform any duty imposed by this chapter or other applicable law, or whenever the Superintendent of Building or his authorized representative has reasonable cause to believe that there exists in any building or upon any premises any violation of the provisions of this chapter, or other applicable law, or any condition which makes such building or premises hazardous, unsafe or dangerous, the Superintendent of Building or his authorized representative is hereby authorized to enter such property at any reasonable time and to inspect the same and perform any duty imposed upon the Superintendent of Building by this chapter or other applicable law, provided that:

- (1) If such property be occupied, he shall first present proper credentials to the occupant and request entry explaining his reasons therefor; and
- (2) If such property is unoccupied, he shall first make a reasonable effort to locate the owner or other person having charge or control of the property, explain his reasons for the inspection, and request consent to enter; and
- (3) If consent to enter is refused or cannot be obtained, whether a property is occupied or unoccupied, the Superintendent of Building or his authorized representative shall obtain an inspection warrant.

- (b) **Exigent circumstances.** Notwithstanding the foregoing, if the Superintendent of Building or his authorized representative has reasonable cause to believe that the building or premises is so hazardous, unsafe or dangerous as to require immediate inspection to safeguard the public health or safety, he shall have the right to immediately enter and inspect such property, and may use any reasonable means required to effect such entry and make such inspection, whether such property be occupied or unoccupied and whether or not permission to inspect has been obtained. If the property is occupied, he shall first present proper credentials to the occupant and demand entry, explaining his reasons therefor and the purpose of his inspection. No person shall fail or refuse, after proper demand has been made upon him, as provided above, to promptly permit the Superintendent of Building or his authorized representative to make any necessary inspection.

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tion in the exigent circumstances. Any person violating this subsection shall be guilty of a misdemeanor.

- (c) The applicant, by accepting any permit issued pursuant to this chapter, does thereby consent and agree to the entry upon the premises described in the permit by department personnel for the purpose of conducting such inspections as are required by this chapter or other applicable laws.

### SECTION 98.0109 EXPRESS PERMITS

- (a) **Guaranteed Express Permit program (GEP).** The department shall offer a walk-in Express Permit customer a money-back guarantee if:
- (1) the customer waits longer than 30 minutes for service to begin; or
  - (2) the customer waits longer than 60 minutes for the processing of the permit from the time that service begins.
- (b) **Guaranteed Express Permit (GEP) program guidelines.** If a customer waits longer than the time limits stated in Section 98.0109 (a), and the wait can be verified by the department through the use of electronic equipment, then the department shall waive the permit fee.
- (c) **Program limitations.** The GEP applies only to those permits issued at the Express Permit Counter. The department may add or delete certain permit types from the list of Express Permits at its discretion. GEP does not apply to E-Permits and is limited to one permit per person, per permit application. GEP does not apply to those permits requiring clearance or review by other agencies. The GEP program shall be suspended during power failures, computer system failures, or during times of emergency including, but not limited to, fire, earthquake, or other manmade or natural disaster.

# DIVISION 4 – APPEALS AND REQUEST FOR SLIGHT MODIFICATION APPEAL FEES – AVAILABILITY OF RECORDS FOR INSPECTION – BOARD RELATED SERVICES – INVESTIGATION – POWERS OF DEPARTMENT AND BOARD AND PENALTIES

## SECTION 98.0402

### CODE ENFORCEMENT COSTS INCURRED: INVESTIGATION COSTS, FEES AND FINES

- (a) **Investigation fee required.** Whenever any work has been commenced without authorization by a permit or application for inspection, and which violates provisions of Articles 1 through 8 of Chapter IX of the *Los Angeles Municipal Code*, and if no order has been issued by the department or a court of law requiring said work to proceed, a special investigation shall be made prior to the issuance of any permit, license or application for inspection. An Investigation Fee which shall be double the amount charged for an application for inspection, license or permit fee, shall be collected on each permit, license or application for inspection so investigated. The fee required by this subsection shall be in addition to any other fees required by the above referenced codes Articles 1 through 8 of Chapter IX of the *Los Angeles Municipal Code*. In no event shall the Investigation Fee be less than \$400.00. The payment of the Investigation Fee shall not exempt any person from compliance with the provisions of the code nor from any penalty prescribed by law.
- (b) **Collection fee for delinquent invoice for boilers, pressure vessels, elevators and emergency systems.** Whenever an owner or user of any apparatus, equipment or emergency system fails to pay the fees required by Sections 92.0126, 92.0129(d), 92.0132(b), (d) and (e), 93.0235 and 97.0314 within 60 days after notification, the owner or user shall pay, additionally, a collection fee equal to 50% of the required fee specified under Sections 92.0126, 92.0129(d), 92.0132(b), (d) and (e), 93.0235 and 97.0314.
- (c) An investigation fee of \$15.00 per report shall be charged and collected for each boiler or pressure vessel insurance report not submitted as required by Section 97.0318. This investigation fee shall become due 30 days after the date the inspection has been performed and remains unreported and is in addition to the insurance processing fee.
- (d) **Non-compliance inspection fee required.** See Section 98.0411.
- (e) **Annual inspection fee.** Whenever the department of Building and Safety makes annual inspections pursuant to Sections 12.26 F.3., 12.26 I.5. and 13.03 of the *Los Angeles Municipal Code* (or any other provision of this code) the department shall collect a fee from the property owner or business operator for inspection of each “recycling center” and “yard” as defined in Section 12.26 F.1., each “automotive repair garage” and “used vehicle sales area” business as defined in Section 12.26 I.1., each “surface mining operation” as defined in Section 13.03 B., mining operation” as defined in Section 13.03 B., and each “col-

lection bin” as defined in Section 12.03. The annual inspection fees shall be as follows:

1. For each recycling center, yard, repair garage or used vehicle sales area. . . . . \$457.00
  2. For each surface mining operation a fee of. . . \$265.00
- (f) The department shall collect an amount levied by penalty fine from every owner or operator of a yard, repair garage or used vehicle sales area, as described in Subsection (e) above, for the following violations of the *Los Angeles Municipal Code*:
1. **Repeat Violation.** Pursuant to Sections 12.26 F.15. and 12.26 I.18. of the *Los Angeles Municipal Code*, a penalty fine of \$200.00 shall be levied when cited in a subsequent notice to comply for the same violation.
  2. **Notice of Revocation or Failure to Pay Repeat Violation Fee.** Pursuant to Section 12.26 F.14. or 12.26 I.16. of the *Los Angeles Municipal Code*, a penalty fine in the amount of \$750.00 shall be levied for each violation specified in a notice of intent to revoke or as a result of failure to pay a repeat violation fee.
- (g) In addition to any other remedy provided by law, the city may collect any judgment, fee, cost, or charge, including any permit fees, fines, late charges, or interest, incurred in relation to the provisions of this section as provided in *Los Angeles Administrative Code* Sections 7.35.1 through 7.35.8.

## SECTION 98.0403.1

### POWERS OF THE DEPARTMENT AND THE BOARD

#### (a) Powers of the Department.

1. The department is granted the power to enforce all ordinances and laws relating to the construction, alteration, repair and demolition, or removal of buildings or structures in the city, and to the installation, alteration, repair, use, and operation of all heating, plumbing, lighting, ventilating, refrigerating, electrical and mechanical appliances and equipment in those buildings or structures.
2. The department is granted the power to enforce all ordinances and laws relating to the construction, alteration, repair, removal or installation of elevators, escalators, console and/or stage lifts, incline cars, manlifts, manhoists, steam boilers, pressure vessels and all connections and appurtenances pertaining to their proper functioning.
3. The department is granted the power to enforce the zoning ordinances of the city.
4. The department shall have the power and duty to enforce all ordinances and laws relating to grading and control of excessive dust emission.

5. The department shall have the power and duty to enforce all portions of the Rules and Regulations of the State Fire Marshal which relate to the construction, alteration, repair, demolition, or removal of buildings, or structures, and to the use and operation of all heating, plumbing, lighting, ventilating, refrigerating, electrical, and mechanical appliances therein. Provided, however, that no application for modification of specific provisions of the Rules and Regulations of the State Fire Marshal shall be granted by the department, unless and until such application shall be first submitted to the Chief Engineer of the Fire Department or his representative for report and recommendation with respect thereto.
6. The department shall have the power to enforce those building regulations mandated by State or Federal law to be enforced by the local building department or building official.
7. The department shall have the power to enforce States laws relating to buildings, structures and construction activities provided the authority to do so has been allowed or granted by the State and the department has determined to undertake such enforcement.
8. The department shall have the power to enforce other ordinances and laws when designated to do so by law.
9. In the exercise of the powers enumerated in this subsection, the department shall have the power to apply the building ordinances of the city (Chapter 9 of the code) and those building regulations mandated by State law to be enforced by the local agency, building department or building official to buildings and structures containing one or more air space lots as defined in Chapter 1, Article 2, of the code so as to treat the entirety of such buildings or structures as if they were on or within a single lot, provided:
  - i. That such buildings or structures or portions thereof would otherwise conform to such ordinances and regulations, but for the creation of such air space lots; and
  - ii. That a covenant and agreement, in a form designed to run with the land and satisfactory to the department be recorded with the Office of the County Recorder and a copy filed with the department by the owners binding themselves and future owners and assigns to keep, preserve and maintain all portions of such buildings or structures in accordance with and pursuant to such building ordinances and regulations.
10. The department shall have the power to hear and act upon requests for slight modifications in individual cases to the building ordinances of the city, and regulations under Articles 1 through 8 of

Chapter IX of the *Los Angeles Municipal Code*. In granting a request for a slight modification, the department shall determine that the slight modification is reasonably equivalent to the ordinance requirement involved, that a special individual reason makes the strict letter of the ordinance impractical and that the slight modification is in conformity with the spirit and purpose of the code or codes involved.

11. The department shall have the power to hear and determine requests for slight modifications for individual cases in the yard area requirements of the zoning ordinance, provided that in each such modification, the Superintendent shall first find that a special, individual reason makes the strict letter of the ordinance impractical and that the modification is in conformity with the spirit and purpose of the ordinance involved. Any action granting a modification shall be recorded and entered in the files of the department.

For structures and additions constructed after January 1, 1995, slight modifications from the yard requirements shall be limited to deviations permitting portions of buildings to extend into a required yard or other open space a distance of not to exceed 20 percent of the width or depth of such required yard or open space. However, for structures and additions existing prior to January 1, 1995, slight modifications may be granted for yard deviations slightly over 20 percent.

Except as expressly provided herein, the Superintendent of Building shall not grant deviations from the lot area, height, or density requirements. Further, the Superintendent shall not grant deviations from the yard requirements relating to the height of fences and walls, or including those for tennis or paddle tennis courts and other game courts.

If the yard regulations cannot reasonably be complied with or it is difficult to determine their application on lots of peculiar shape or location, then the regulations may be modified or determined by the Superintendent of Building. The Superintendent may also waive all or part of the required loading space on unusually shaped lots, oddly located lots, or hillside lots, when such space cannot reasonably be provided or utilized.

Requests for yard modifications as provided in this subsection shall be made in accordance with the procedures established in Section 98.0403.2 of the *Los Angeles Municipal Code*.

12. The department shall have the power to enforce any administrative nuisance abatement determination made by the Zoning Administrator, former Board of Zoning Appeals, City Planning Commission, Director of Planning or City Council. There shall be no administrative appeal to any City official or Board from such an enforcement action by the Department.



**(b) Powers of the board.**

1. The board shall have the power to hear and act upon appeals filed by any person aggrieved by the department requesting a slight modification under this section, except for those actions permitted in subsection (a)11.

If the board grants a slight modification on appeal, then the board shall make the same findings as required by the department when acting on a slight modification.

2. The board shall have the power to hear and determine appeals from orders, interpretations, requirements, determinations, or actions of the department pertaining to enforcement of specific ordinances, regulations, or laws in site-specific cases. These appeals shall state how the department has erred or abused its discretion in the matter of the appeal. The department shall provide the board with a written report on the appeal. The department, however, may reverse or modify the action appealed at any time prior to final action by the Commission. The board shall hear and make its determination on the appeal no later than the 30th calendar day after the appeal is heard.

Notwithstanding the above, the board shall have no authority to hear and determine appeals from orders, interpretations, requirements, determinations, or actions of the department pertaining to enforcement of specific ordinances, regulations, or laws contained in Chapter I of this code and in other land use ordinances. Any appeal concerning these requirements shall be made to the Director of Planning in accordance with the provisions set forth in Section 12.26 K.

The department shall maintain a file of requests from individuals or groups who wish to be notified of certain determinations on individual job addresses. These requests shall be submitted to the department in writing and shall specify the subject job address, and the address and telephone number where they wish to be notified. The request shall be in force until the end of the calendar year in which the request is filed and the request may be renewed at any time during the subsequent calendar year.

The department shall provide a copy of board agendas by U.S. mail to individuals or groups who wish to receive them. The mailing of agendas shall be maintained by a yearly subscription fee of \$50.00. A subscription fee of \$25.00 will be charged if there is less than six months remaining in the calendar year. Fees for individual and/or mail requests for copies of board agendas and other documents shall be as set forth in *Los Angeles Administrative Code*, Sections 12.31 and 12.32.

3. The board shall have the power to act in other situations as provided by ordinance or law.

4. The board shall have the power to refuse to hear an appeal if the board determines that the appeal is basically a restatement of a previous appeal on the same job and no substantial additional justification has been presented by the appellant.

5. The power of the board shall not include the right to hear and act upon any of the following:

- i. An appeal from the department's action on a request for a slight modification, an appeal of a legitimate department order or an appeal objecting to the department's determination, if such appeal is:

- a) Filed on or after the date a citation is issued charging a person with a violation of the code or any other ordinance or law enforced by the department, and the appeal in any way involves the citation issuance, an arrest associated with the citation issuance, or the facts or code issues underlying the citation issuance.

- b) Filed on or after evidence of a violation of the code or any other ordinance or law enforced by the department is presented to and accepted by the City Attorney for criminal prosecution.

If an appeal or request for a slight modification is not filed with 15 days after the department's action on the violation, the action and/or determination of the department shall be final.

- ii. An appeal in violation of limitations placed upon the board's powers as specified in other ordinances, regulations, or law.

- iii. Repealed.

- iv. If the board or Superintendent determines that an appeal or request for a slight modification, filed with the board, relates to department enforcement of laws or access to public accommodations and housing by the physically handicapped, then the matter shall be referred to the Handicapped Access Appeals Commission for its action. The board's jurisdiction shall not include the right to hear appeals from or otherwise review any action, order, or determination of the Handicapped Access Appeals Commission.

- v. An appeal dealing with financial, personnel, or administrative issues or other similar matters.

- vi. An appeal seeking relief from any nuisance abatement determination or enforcement decision of the department relating to any administrative nuisance abatement determination made by the Zoning Administrator, former Board of Zoning Appeals, City Planning Commission, Director of Planning or City Council.

**SECTION 98.0403.2  
PROCEDURES FOR APPEALS TO THE  
DEPARTMENT AND TO THE BOARD**

**(a) Appeals to the department under power granted in section 98.0403.1.**

1. Such appeals shall be made in writing, upon appropriate forms provided therefor by the department.
2. An appeal processing fee of \$130.00 for the first item and \$39.00 for each additional item shall be paid by the appellant prior to the department processing the appeal and making a determination.

In addition to the appeal processing fee required by this subdivision, an inspection fee of \$84.00 per inspection shall be paid by the appellant when, in the opinion of the department, the appeal requires a field inspection to verify site conditions. Miscellaneous fees are provided for in Section 98.0415(f) may be collected to prepare a written report.

An additional inspection fee as described in Section 98.0412(a) may be charged by the department for each inspection necessary to verify compliance with the conditions established by the determination of the department.

**Exceptions:**

- A. No appeal fee shall be required on any appeal from an order arising from an area-wide survey, conducted by the department, of buildings used for one family housing, if the work required to bring the unit into compliance with the *Los Angeles Municipal Code* is the same as specified in the order.
  - B. No appeal fee shall be required for any appeal on a child-care facility if the owner or operator is a nonprofit child-care organization that has filed a notarized affidavit to that effect with the department.
3. If the Superintendent determines that an item of request involves a material, device or method of construction appropriate for a General Approval under Section 98.0501 of the *Los Angeles Municipal Code*, such request shall be accompanied by a filing fee of \$165.00 for each request submitted which includes such item.

A supplemental fee as specified in Section 98.0501(b)4 shall be charged to cover processing time in excess of one hour. If the department determines that the material submitted with the appeal request substantiates the claim made therein, and no request to hold a hearing is pending the department may grant a conditional approval of such request.

4. In any appeal the appellant making the request shall cause to be made, at the appellant's own expense, any tests required by the department to substantiate the claims therein.

5. The department may hold any hearings it deems appropriate to consider the appeal.

**(b) Appeals to the board under the power granted by section 98.0403.1 (b).**

1. Such appeals shall be made in writing, upon appropriate forms provided therefor by the department.
2. Appeals shall be accompanied by a filing fee based upon the subject of the request as set forth in Tables 4-A or 4-B of this division.

**Exceptions:**

- A. No filing fee shall be required on any appeal from an order arising from an area-wide survey, conducted by the department, of buildings used for one family housing, if the work required to bring the unit into compliance with the *Los Angeles Municipal Code* is the same as specified in the order.
  - B. No filing fee shall be required for any appeal on a child care facility if the owner or operator is a nonprofit child care organization that has filed a notarized affidavit to that effect with the department.
3. If the board determines that evidence is required to be taken or that further investigation is necessary to decide any such appeal, the board may refer the matter to a hearing examiner for hearing and report in accordance with provisions of Charter Section 217 or to an ordinance-established advisory board, or may refer the matter to the department for further investigation and report, whichever the board deems most appropriate.
  4. In any appeal, the appellant or person making such request shall cause to be made, at the appellant's own expense, any tests required by the board to substantiate the claims therein.
  5. In addition to any other appeal fees required by this subsection, each appeal shall be accompanied by an inspection fee of \$84.00 per inspection when, in the opinion of the department, the appeal requires a field inspection to verify site conditions. The department may charge an additional inspection fee as specified in Section 98.0412(a) for each inspection necessary to verify compliance with the conditions established by the board in any approval or conditional approval.
  6. Miscellaneous fees as provided for in Section 98.0415 (f) may be collected to prepare a written report.

**SECTION 98.0404  
EXTRA TERRITORIAL INSPECTIONS**

- (a) The Department of Building and Safety may make inspections outside the territorial boundaries of the City of Los Angeles when the Superintendent of Building determines that such inspection is necessary for the city's public health, safety or general welfare. Such inspections may include the inspection of items intended to be used in

building construction or as building equipment in the City of Los Angeles. Employees of the Department of Building and Safety shall inspect such items that are manufactured or fabricated during the process of such manufacturing or fabrication in accordance with the requirements of the *Los Angeles Municipal Code*.

- (b) The Superintendent shall adopt reasonable rules and regulations governing such inspections made outside the city boundaries.

#### **SECTION 98.0405 CHARGES FOR PRINTED MATERIALS AND MISCELLANEOUS TYPE SERVICES**

The department shall charge and collect the following amounts for the items shown in Table 4-C prior to providing such materials and/or service to members of the public. The charges herein established shall be sufficient to fully compensate the city for all expenses incurred in the preparation, production, handling and distribution of the items listed and including general overhead expenses. The Superintendent of Building shall periodically review such charges to ensure that all applicable expenses to the city are fully compensated.

#### **SECTION 98.0406 INSPECTION FEES FOR OFF HOURS INSPECTION**

The department may, at its discretion, make inspections at other than normal working hours upon application therefor by a permittee. A fee in addition to fees charged elsewhere in this code, at a rate of \$100.00 per hour shall be charged for such inspection, time to include travel to and from place of inspection, with a minimum of \$300.00.

#### **SECTION 98.0407 SPECIAL ENFORCEMENT PROCEDURE FEES**

Whenever special enforcement procedures are required to obtain compliance with properly executed departmental orders that apply to application for inspection of Construction Permits, a fee of \$32.00 shall be assessed in addition to fees specified elsewhere in the Municipal Code.

#### **SECTION 98.0408 ISSUANCE OF CITATIONS BY DESIGNATED EMPLOYEES**

- (a) In the performance of their duties, Senior Safety Engineers- Pressure Vessels, Senior Safety Engineers-Elevators, Safety Engineers-Pressure Vessels, Safety Engineers-Elevators, Senior Electrical Equipment Testers, Electrical Equipment Testers, Equipment Safety Investigators, Electrical and Mechanical Engineering Assistants, Building Electrical and Building Mechanical Engineering Associates assigned to the Electrical and Mechanical Test Laboratories, and Senior Inspectors and Inspectors in the classifications of Building, Building-Mechanical, Electrical, Heating and Refrigeration and Plumbing shall have the power, authority and immunity of a public officer or employee, as set forth in California Penal Code Section 836.5, to make arrests without a warrant whenever he or she has reasonable cause to believe that the person to be arrested has committed a misdemeanor or an infraction in his or her presence in violation of an ordinance or statute which such employee has the duty to enforce. Those ordinances or statutes shall include any law set forth in Subsection (b) of this section. In accordance with Section 11.06 of the *Los Angeles Municipal Code*.

**TABLE NO. 4-A  
FILING FEES\* FOR APPEALS**

GROUP OCCUPANCY	FIRST ITEM FOR SINGLE BUILDING TYPE OF BUILDING**				Each Additional Item
	V	IV	III	I & II	
R-3 & U	\$215	\$215	\$215	\$215	\$76
All Others	354	354	354	632	215

All other filing fees not covered in the above schedule including appeals pursuant to Los Angeles Municipal Code Section 12.26, shall be \$500.00 for the first item and \$150.00 for each additional item.

See Section 91.105.4 for fees for referral to the Sign Advisory Committee.

\*\* Accessory building, structures or appendages will be considered the same as main building and occupancy.

**TABLE NO. 4-B  
FILING FEES\* FOR APPEALS GRADING AND SOIL REQUIREMENTS**

NUMBER OF LOTS	CONSTRUCTION REQUIREMENTS	UNSTABLE SOIL OF GEOLOGY	EACH ADDITIONAL ITEM
1-5 lots	\$280	\$480	\$115
6 or more lots	580	880	280

See Section 91.105.3 for fees for referrals to the Engineering Geology Advisory Committee.

**TABLE NO. 4-C  
CHARGES FOR PRINTED MATERIALS**

ITEM	CHARGE
"Certificate of Inspection and Permit to Operate Steam Boiler or Pressure Vessel" Form M-1	\$11.00 pad (100)
"Research Report Index"	\$30.00 per copy

See Section 91.105.3 for fees for referrals to the Engineering Geology Advisory Committee.

*ipal Code*, in any case in which a person is arrested pursuant to this authority and the person arrested does not demand to be taken before a magistrate, the public officer or employee making the arrest shall prepare a written notice to appear and shall release the person on his or her promise to appear as prescribed by Sections 853.5 and 853.6 of the California Penal Code. If such person signs the written notice to appear, thereby promising to appear, he or she shall not be taken into physical custody.

- (b) Any person designated in Subsection (a) of this section shall have the power, authority and immunity of a public officer or employee under California Penal Code Section 836.5 to make arrests without a warrant whenever he or she has reasonable cause to believe that the person to be arrested has committed a misdemeanor or an infraction in his or her presence which is a violation of any of the following *Los Angeles Municipal Code* Sections:

41.14	62.51 1.(e)	66.25
41.45	62.79	67.02(a)
42.00	62.80	80.73(b)2.A.(4)
56.08	62.96(a)	80.73(b)2.C., D., E.
56.11	62.130	85.01(a)
62.45(b)	64.30 with respect to storm drain	114.04
62.49(a)	systems and waters of the State	114.05

or a violation of State of California Penal Code Section 556 or 556.1.

- (c) Those persons designated in Subsection (a) of this section are hereby authorized to issue parking citations as provided for in Section 80.00 of the *Los Angeles Municipal Code* for the violation of Municipal Code Sections 80.53, 80.56, 80.73(b)2.A.(1), (2), (3), 80.73(b)2.F., 80.73.2, 80.77 and 85.01(b) and California Vehicle Code Section 22500(f).

#### SECTION 98.0410 SURCHARGE FOR ONE-STOP PERMIT CENTER

There shall be added to the total of all fees imposed for any permit, plan check, license, application, report, and inspection provided for in Articles 1 through 8 of this chapter excluding Sections 91.6205.18, 91.107.4.4, 91.107.4.6, 98.0402, 98.0411, 98.0416, 98.0418 and 98.0716 of this code a surcharge in an amount equal to the greater of two percent of the fees or one dollar.

#### SECTION 98.0411 NONCOMPLIANCE FEES

- (a) **Noncompliance fee.** If, in the course of enforcing any state law or local ordinance, the department issues an order to a person and the person fails to comply with that order within 15 days following the due date for compliance specified in the order and any extension thereof, then the department shall have the authority to collect a noncompliance fee.

The purpose of this fee is to recover a portion of the cost of any additional inspection and administrative or appeal proceedings incurred by the department in order to

enforce the code or secure compliance with the order. No more than one such fee shall be collected for failure to comply with an order. This noncompliance fee shall be in addition to fees specified elsewhere in the *Los Angeles Municipal Code*.

The department shall not impose a noncompliance fee unless the order states that “a proposed noncompliance fee may be imposed for failure to comply with the order within 15 days after the compliance date specified in the order or unless an appeal or slight modification is filed within 15 days after the compliance date”.

**Exception:** If a person against whom an order is issued appeals that order within 15 days after the compliance date set forth in the order, then the Department may not impose a noncompliance fee until a final appeal determination upholding or modifying the underlying Department order has been made. The Department may then impose a noncompliance fee only for failure to comply with the final appeal determination within 15 days after the compliance date or dates specified in the determination.

- (b) **Appeal.** Any person served with an order and notice of proposed non-compliance fee may appeal the order and proposed imposition of the non-compliance fee or request a slight modification pursuant to the procedures set forth in Section 98.0403.1 of this code.

The department or the board may rescind or modify the proposed non-compliance fee under the authority granted by Section 98.0403.1 of this code.

If the appeal or request for slight modification is not filed within 15 days after the compliance date or extensions granted therefrom, the determination of the department to impose and collect a non-compliance fee shall be final.

- (c) **Collection of the Noncompliance Fee.** If the department determines pursuant to Subsections (a) and (b) of this section that a noncompliance fee is due, then it shall notify the person cited, by United States mail in a sealed envelope, with postage paid, addressed to the last known address of the person cited as that address appears in the last equalized assessment roll. The notice of noncompliance fee shall state that:

“if the noncompliance fee incurred is not remitted to the department within 30 days after the date of mailing of this notice, the department shall impose a late charge equal to two times the noncompliance fee and a collection fee equal to 50 percent of the original noncompliance fee. Any person who fails to pay the noncompliance fee, late charge or collection fee shall also pay interest. Interest shall be calculated at the rate of one percent per month, or fraction of a month, on the amount of the noncompliance fee, late charge and collection fee imposed, from the 60th day after the date of mailing of this notice until the date of payment.”

Service of the notice of noncompliance fee shall be deemed to have been completed at the time of deposit in the United States mail.

The person cited shall remit the noncompliance fee to the department within 30 days after the date of mailing the

notice of noncompliance fee. If the person cited fails to do so, then the department may demand payment of the noncompliance fee from the person cited and may withhold the issuance of building permits, licenses or approvals to the cited person until the noncompliance fee has been paid.

A late charge equal to two times the noncompliance fee and a collection fee equal to 50 percent of the original noncompliance fee shall be imposed if the fee is not paid within 30 days after the date of mailing the notice of noncompliance fee. Any person who fails to pay the noncompliance fee, late charge or collection fee shall also pay interest. Interest shall be calculated at the rate of one percent per month, or fraction of a month, on the amount of the noncompliance fee, late charge and collection fee imposed, from the 60th day after the date of mailing the notice of noncompliance fee until the date of payment. Any partial payments of the noncompliance fee, late charge, collection fee or interest received shall be applied first to interest, then late charge and collection fee, and lastly to the noncompliance fee.

The city shall have the right to bring legal action in any court of competent jurisdiction to enforce the order and collect the amount of these fees. In addition to any other remedy provided by law, the city may collect any judgment, fee, cost, or charge, including any permit fees, fines, late charges, or interest, incurred in relation to the provisions of this section as provided in *Los Angeles Administrative Code*, Sections 7.35.1 through 7.35.8.

- (d) The amount of the non-compliance fee shall be as shown in Table No. 4 D.

#### SECTION 98.0412 INSPECTION FEES

The following fees when referenced to this section by other sections of Chapter IX of the *Los Angeles Municipal Code* shall be collected by the department for the following types of inspections:

- (a) Minimum inspection fee<sup>1</sup> . . . . \$90.00 per inspection
- (a1) Single fixtures<sup>2</sup> . . . . . \$55.00 per inspection
- Exception:** No permit or inspection shall be required for the installation or replacement of garbage disposals within individual dwelling units.
- (b) Additional inspection. . . . . \$90.00 per inspection
- (c) Miscellaneous permits or inspections . . . . . \$90.00 each
- (d) Special equipment inspection . . . . . 104.00 per hour or fraction thereof
- (e) Off-site inspection . . . . 104.00 per hour, minimum \$277.00
- (f) Witnessing performance test. . . . . 104.00 per hour or fraction thereof

1. When the cumulative fees set forth in this code are less than the minimum fee, the minimum fee shall be paid which shall include the issuing fee.
2. The fee for single fixture shall apply to the installation of only one electrical, plumbing or mechanical fixture / equipment and shall include the issuing fee.

#### SECTION 98.0414 CERTIFICATION FEES

Before accepting for filing any application for a Certificate of Qualification or a Maintenance Certificate of Registration, the department shall collect from the applicant the following fees:

- (a) Certification of Qualification
  - 1. Initial application fee . . . . . \$50.00

**TABLE NO. 4D  
NONCOMPLIANCE INSPECTION FEES**

BUILDINGS, OTHER STRUCTURES, OPEN USES, SIGNS, LICENSES AND EQUIPMENT	
Item	Fee
Buildings, Other structures, Open Uses, Signs, Licenses and Equipment	\$660.00
NONCOMPLIANCE FEE EXISTING BUILDING ENERGY AND WATER EFFICIENCY (EBEWE) PROGRAM	
Item	Fee
Buildings Noncompliant with City EBEWE Program	\$202.00
GRADING	
Item	Fee
Class I Slope Failure <sup>1</sup>	\$3,474.00
Class II Slope Failure	2,779.00
Class III Slope Failure	2,084.00
Other Grading Code Violations	1,389.00

1. Refer to Section 91.7003 for definition of slope failure classification.

- 2. Subsequent application and examination fee . . . . . \$50.00
- 3. Annual renewal fee. . . . . \$25.00
- (b) Maintenance Certificate of Registration
  - 1. Initial certificate fee . . . . . \$150.00
  - 2. Annual renewal fee. . . . . \$150.00

#### SECTION 98.0415 CLERICAL, ISSUING OR RESEARCH FEES AND MISCELLANEOUS FEES

The department may collect a fee from the applicant or appellant for the following types of services:

- (a) Correction of address for permit . . . . . \$34.00
- (b) Transfer of name of permittee to any other person . . . . . 48.00
- (c) Permit issuing fee for:
  - Electrical, plumbing, mechanical and elevator permits . . . . . 23.00
  - Building permits . . . . . 27.00
- (d) Supplementary permit issuing fee . . . . . 19.00
- (e) Supplementary/miscellaneous plan check fee \$104.00 per hour or portion thereof
- (f) Fee for report<sup>1</sup> . . . \$104.00 per hour or portion thereof

1. A minimum fee of \$104.00 shall be payable when a request for a written report on a property or code item is made and any balance shall be due prior to the release of the report. Written reports for which this fee is applicable shall include, but not limited to, interpretation of the public

records for the property (document research), termination of covenants and agreements, written interpretation or request for modification of the codes (municipal and/or other codes and regulations) and issuance of reports seeking the status of code violations, permitted use, etc. of a property or other similar purposes.

#### **SECTION 98.0416 BUILDING AND SAFETY SYSTEMS DEVELOPMENT SURCHARGE**

There shall be added to the total of all fees imposed for any permit, plan check, license, application, report and inspection provided for in Articles 1 through 8 of this chapter excluding Sections 91.6205.18, 91.107.4.4, 91.107.4.6, 98.0402(f), 98.0410, 98.0411, 98.0416, 98.0418 and 98.0716 of this code a surcharge in the amount equal to the greater of six per cent of the fee or one dollar. All monies received from this surcharge shall be deposited to and expended as the "Building and Safety Systems Development Account" of the Department of Building and Safety Building Permit Enterprise Fund pursuant to Section 5.121.8 of the *Los Angeles Administrative Code*.

#### **SECTION 98.0417 PROCESSING FEES FOR MISCELLANEOUS CERTIFICATES OF COMPLIANCE**

The Department of Building and Safety shall charge a fee of \$29.00 for the processing of each Certified Licensed Contractor Certificate of Compliance. Such certificates shall be provided for each retrofit of a hot water heater, forced air unit, air-conditioning unit, plumbing fixture, solar panel, domestic water piping within a dwelling or accessory swimming pool, metallic water service piping, reroof, smoke detector, shower pan, masonry and concrete fences not exceeding six (6) feet in height replaced or installed, and masonry chimneys repaired as specified in Section 91.0306.4.

#### **SECTION 98.0418 SURCHARGE FOR DEVELOPMENT OF AUTOMATED SYSTEMS FOR THE DEPARTMENT OF CITY PLANNING**

There shall be added to the total of all fees imposed for any building permit required by the provisions of Article 1 of Chapter IX of this code, an automated systems development surcharge in an amount equal to the greater of 6 percent of the fee or \$1.00, except that any other surcharge shall be excluded from the computation of the surcharge under this section. The Fire Hydrant Fee, Section 91.107.4.4, and the Arts Development Fee, Section 91.107.4.6, shall also be excluded from the computation of the surcharge under this section. In addition, an administrative fee of \$5.00 shall be collected each time the surcharge is collected. Moneys received from this surcharge shall be deposited into the City Planning Systems Development Fund pursuant to *Los Angeles Administrative Code* Section 5.457, except that the \$5.00 fee shall be deposited into the General Fund and credited to the departmental receipts of the Department of Building and Safety.

#### **SECTION 98.0420 REFUNDS OF DEPARTMENT FEES**

No claim for refund of department fees shall be allowed in whole or in part unless filed with the City Clerk within 12 months from the date of expiration of the permit/application or of any extensions granted by the department or within 12 months from the date of any department or board action in which a valuation, as required by Chapter IX of the *Los Angeles Municipal Code*, is lowered pursuant to the provisions of Section 98.0403.1 of this code. In the case a valuation is lowered, the refund shall be 100% of the difference paid and what should have been paid on all fees.

Insofar as the provisions of this section are in conflict with the provisions of Sections 22.12 and 22.13 of the *Los Angeles Municipal Code*, the language of this section shall be construed to control and supersede the language of said sections as to any such conflict.

#### **SECTION 98.0421 CODE VIOLATION INSPECTION FEE**

- (a) **Code Violation Inspection Fee.** The Department may impose a fee equivalent to the Department's actual cost of investigation or \$336.00, whichever is less, whenever the Superintendent of Building conducts an inspection and issues an order or notice after verification of violation(s) of any provision(s) of the *Los Angeles Municipal Code*, Administrative Code or any Ordinance or State law enforced by the department.

The fee may be imposed only after a violation is identified and verified upon inspection by the Superintendent. The individual(s) notified, shall be jointly and severally responsible to ensure that the fee specified in this section is paid to the department. Notification of the fee shall be given to the property owner, person in control of the property, the actual violator, tenant in possession and/or business operator as may be relevant and determined by the Superintendent.

- (b) **Notice.** Notification of the order or notice and the Code Violation Inspection Fee shall be sent by United States Mail in a sealed envelope, with postage paid, addressed to the last known address of the person cited as the address appears in the last equalized assessment roll or delivered in person. Service of the notice shall be deemed to have been completed at the time of deposit with the United States Postal Service.
- (c) **Collection of the Code Violation Inspection Fee.** The person cited shall remit the Code Violation Inspection Fee to the department within 30 days of the effective date of the order or notice. If a permit is required in order to correct a violation stated in the order or notice, the permit shall not be issued until the Code Violation Inspection Fee including any late charge is paid. Failure to pay the Code Violation Inspection Fee within 30 days after notification will result in a late charge of two (2) times the Code Violation Inspection Fee plus a 50 percent (50%) collection fee for a maximum total of \$1,176.00. The Code Violation Inspection Fee is in addition to any other

applicable fee, fine or penalty specified elsewhere in the *Los Angeles Municipal Code*, Administrative Code or any Ordinance or State Law enforced by the department.

In addition to any other remedy provided by law, the city may collect any judgment, fee, cost, or charge, including any permit fees, fines, late charges, or interest, incurred in relation to the provisions of this section as provided in *Los Angeles Administrative Code* Sections 7.35.1 through 7.35.8.

- (d) **Noncompliance Fee.** A noncompliance fee pursuant to Section 98.0411 may be charged.
- (e) **Appeals.** Any person served with an order or notice may appeal the Code Violation Inspection Fee or request a slight modification pursuant to the procedures set forth in Section 98.0403.1 of the *Los Angeles Municipal Code*.

The department or the board may rescind or modify the Code Violation Inspection Fee under the authority granted by Section 98.0403.1 of the *Los Angeles Municipal Code*.

If the appeal or request for slight modification is not filed within 30 days after the effective date of the order or notice or extensions granted therefrom, the determination of the department to impose a Code Violation Inspection Fee shall be final.

#### **SECTION 98.0422 FEES FOR OFF HOURS PLAN CHECK AND OTHER SERVICES**

At the request of the applicant, the department may, at its discretion, provide plan check or other services at other than normal working hours upon application therefor by an applicant. A fee, in addition to fees charged elsewhere in this code, equal to 50 percent of the fees for plan checking or other services or processing shall be collected at the time of the request.





# DIVISION 5 — TESTING PROCEDURES, REGULATIONS AND ADMINISTRATION

## SECTION 98.0501 PRODUCT APPROVAL, ALTERNATE MATERIALS, SYSTEMS, DEVICES AND METHODS OF CONSTRUCTION

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- (a) The provisions of this code are not intended to prevent the use of any material, system, device or method of construction not specifically prescribed by this code, provided any such alternate has been approved and its use authorized by the department.

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When certification or listing is required by this code for any material, system or device, the certification or listing shall be by a certification body that has been accredited by a nationally recognized accreditation body in accordance with ISO/IEC 17065. Testing of products, materials, systems or devices for the purpose of product approval shall be performed by testing laboratories that have been accredited by a nationally recognized accreditation body in accordance with ISO/IEC 17025. The Department shall develop a process for accepting testing laboratories and certification bodies to ensure legitimacy and protect against conflict of interest, and such process shall be published and made available on the Department's website.

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The Department shall have the authority to grant approval for any product or method of construction, provided that sufficient evidence has been provided to the Department to demonstrate adequacy of the prescribed device, material or method of construction with the Code in terms of quality, fire resistance, strength, effectiveness, durability and safety. In granting of such approval, the Department at its own discretion, may do so in the form of a general approval or a one-time approval. The Department shall develop a process for general approval and one-time approval. Such process shall be published and made available on the Department's website.

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The department shall use Division 35 of Article 1 Chapter IX of the *Los Angeles Municipal Code* in evaluating products, materials, systems or devices for approval where such standard exists for the product or the material and may use other approved standards which apply.

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The department determination on an application for general approval may be appealed to the Board of Building and Safety Commissioners under the applicable provisions of this article.

### (b) Fees and term of general approvals.

1. The application for a general approval of a new material, device or method of construction pursuant to Article 1 of Chapter IX of this code, and the application for a two year renewal of a general approval shall be accompanied by a fee as set forth in Table 5-A.

An application for a technical or clerical modification of a general approval shall be accompanied by a fee as set forth in Table 5-A.

The fees for new general approvals and technical modifications include six hours of department processing time.

The fees for renewals and clerical modifications include three hours and one hour of department processing time, respectively.

2. The fees for general approval of a new material or a new method of construction pursuant to Articles 2, 3, 4, 5 and 7 of Chapter IX of this code shall be as provided in Section 98.0502(d).

The initial general approval, when granted, will be valid for one year. An application for renewal must be filed before the expiration of the latest approval or subsequent renewal and, when granted, will be valid for a two year period. Sale and installation shall conform to Section 98.0502(h).

3. The application fee for the initial review for department approval of an evaluation report, pursuant to Article 1 of Chapter IX, shall be as set forth in Table 5-A. This fee shall be paid in lieu of any other application fee for a general approval described in this section.

A fee as set forth in Table 5-A shall also be required for department review of any clerical or technical modifications of a valid evaluation report.

The fees for initial review of an evaluation report and for technical modifications of or additions to, a previously reviewed evaluation report include six and five hours of department processing time, respectively.

The fees for clerical modifications include one hour of department processing time.

If a general approval or renewal is based on an evaluation report issued by a nationally recognized model code organization acceptable to the department, then the general approval and subsequent renewal shall be valid one year and two years respectively or as long as the unrevised evaluation report, including any renewals, is valid, whichever is less.

The department shall review the evaluation reports created pursuant to this section and used as a basis for general approvals, prior to their expiration in order to verify that the reevaluation due dates of the reports remain unrevised and fully accurate in the records of the issuing model code organization. Evaluation reports renewed for two years shall be reviewed bi-

annually. An administrative processing fee as set forth in Table 5-A covering the department costs of the reevaluation review and report distribution shall be required from the entity holding the rights to the general approval.

The fees for review of two year reevaluation reports anticipate two hours of department processing time;

4. The applicant shall agree in the application, to pay supplemental fees at the rate of \$104.00 per hour to cover any additional time required by the department to process general approvals, renewals, reevaluations or modifications which are specified in Subdivisions 1 and 3 of this subsection and any conditional approvals pursuant to Subdivision 3 of Section 98.0403.2(a) of this code. Processing shall include those activities directly related to the general approval for which application has been made and shall include all research, review, correspondence, clerical and consultation time pertinent to the application. The department may require an estimated supplemental fee to be paid when the application is filed. In any event, the supplemental fee shall be paid in full prior to final action on the application by the department. The fees specified in this section, including supplemental fees, are application fees and are not refundable after the department begins processing the application, regardless of whether the application is approved or denied.

**Exception:** Supplemental fees paid in advance which are in excess of the total actual fee are refundable;

5. All applications shall expire 12 months after the department begins processing the application if the request for approval of a new material, device or method of construction has not been cleared of cor-

rective orders and approved. No approval shall be issued until the application is refiled and a new fee paid.

**Exception:** The department may grant an extension of time if the applicant submits in writing sufficient evidence that unusual conditions or circumstances precluded the approval within the allocated time.

- (c) **Off-hour processing of evaluation reports.** Upon request by an applicant and accepted by the department, an off-hour processing fee per Section 98.0422 of the *Los Angeles Municipal Code* may be collected for processing of evaluation reports for alternate materials.
- (d) **Renewal.** Upon expiration of an approval or upon any change in design, material, method of construction or model designation made during the period of approval, it shall be unlawful to sell, offer for sale or use a product until a renewal has been approved under provisions of this section.
- (e) **Requests for extension of time.** Request for extension of time to file for renewals or obtain approval of general approvals, clerical and technical modifications, and renewals shall be made within 90 calendar days following the date of expiration of general approvals and applications for general approvals, modifications, and renewals. If such requests for extensions of time are not received within the allocated time, then a new filing fee shall be required.

## SECTION 98.0502 APPLIANCES, FIXTURES AND EQUIPMENT

- (a) **Scope.** All appliances, fixtures and equipment which are required by the respective codes to be approved and for which standards are therein cited, or for which standards

**TABLE NO. 5-A  
FEE SCHEDULE**

ITEM	GENERAL APPROVAL OF RESEARCH REPORTS (BY LOS ANGELES CITY)	GENERAL APPROVAL OF EVALUATION REPORTS (BY A NATIONALLY RECOGNIZED MODEL CODE ORGANIZATION)
1. Initial application filing	\$3395.00	\$2037.00 <sup>3</sup> \$226.00 <sup>4</sup>
2. Renewal application filing <sup>1</sup> (two years)	\$2942.00	
3. Reevaluation application filing <sup>2</sup> (two years)		\$905.00 <sup>3</sup> \$113.00 <sup>4</sup>
4. Technical Modification	\$1509.00	\$1811.00 <sup>3</sup> \$226.00 <sup>4</sup>
5. Clerical Modification	\$279.00	\$279.00 <sup>3</sup> \$150.00 <sup>4</sup>

1. The Department may approve one year renewals for General Approval of Research Reports, if the applicant makes such a request in writing and submit sufficient evidence of the need for a one year renewal. The fee for a one year renewal shall be \$1,961.00 for General Approval of Research Reports.
2. The Department may approve one year reevaluations for General Approval of Fire- or Life- Safety Product Evaluation Reports, if the applicant makes such a request in writing and submit sufficient evidence of the need for a one year reevaluation. The fee for a one year reevaluation shall be \$400.00 for General Approval of Fire- or Life-Safety Product Evaluation Reports.
3. Fee for Fire-Safety or Life-Safety Products.
4. Fee for Non-Fire-Safety and Non-Life-Safety (non- structural) Products.

or specifications have been adopted by the Superintendent, shall be approved by the department before they may be sold, installed or used.

For the purpose of this section, sale or selling shall refer to any act of selling, offering for sale, displaying or advertising for sale, loaning, renting, leasing, or disposing of by way of gift or premium or otherwise, in connection with the sale or disposal of equipment, fixtures or appliances as designated in this section.

A label or seal of an approved nationally recognized testing agency attached to an item or any identification marking corresponding to a published listing by an approved nationally recognized testing agency indicating that the item has been tested for compliance with the standards cited in the applicable code or adopted by the Superintendent, and indicating that the item is included in the testing agency's factory follow-up inspection and listing service, will be accepted in lieu of approval by the department.

This section shall not apply to general approvals issued pursuant to Section 98.0501.

- (b) **Authority of superintendent.** The Superintendent has the authority to establish standards, specifications and special requirements for materials and methods of construction when standards or specifications are not cited in the code. The Superintendent has the authority to establish rules and regulations for the Mechanical Testing Laboratory and for the Electrical Testing Laboratory

governing requirements for tests, examinations, procedures and approvals, and to establish supplemental fees, including mileage charges for field trips, and charges for examinations and inspections. The rules and regulations shall be in writing and on file in the department and shall have the same force and effect as if they were included in any of the respective articles.

- (c) **Applications of tests and approvals.** Any person submitting any appliance, fixture or equipment for tests, examination, approval or renewal of approval, as required by this section, shall file an application therefore with the department on forms provided by the department.

A separate application shall be made for each item or appliance, fixture or equipment to be tested or examined, unless otherwise determined by the department, and shall bear the signature of the applicant. When necessary, arrangements may be made for all or part of the tests and examinations to be conducted in the field. Should the testing facilities of the department be inadequate to determine compliance with the standards, the Superintendent may use available facilities outside the department, provided the applicant is first notified and the additional cost, if any, is approved by the applicant in writing, for invoicing to and payment by him. The department may, at its discretion, accept tests and reports of tests by an approved testing agency as a basis in part or in full for granting an approval.

**1. Mechanical Testing Laboratory Fees**

ITEM		LABORATORY APPROVAL FEE	GENERAL APPROVAL FEE
1.	Initial application filing*	\$1153.00 (Including 8 hr. processing time but no field mileage)	\$1297.00 (Including 8 hr. processing time but no field mileage)
2.	Renewal application filing*	\$865.00 (Including 5 hr. processing time but no field mileage)	\$865.00 (Including 5 hr. processing time but no field mileage)
3.	Processing time exceeding amount included with application **	\$108.00/hr	\$108.00/hr
4.	Field Mileage, when required. (Mileage based on one way, straight-line distance from Laboratory to test site)		
	0 to less than 15 miles	\$43.00/trip	\$43.00/trip
	15 to less than 30 miles	\$57.00/trip	\$57.00/trip
	30 miles and overmiles	\$57.00/trip plus \$1.00/mile over 30	\$57.00/trip plus \$1.00/mile over 30 miles
5.	Reopening file closed because required production sample not received within 60 days from date application submitted***	\$144.00	\$144.00
6.	Reopening file closed because previous approval expired for more than 30 days. Approval file shall not be reopened more than one year after expiration date. (This fee is in addition to the renewal fee).	\$288.00	\$288.00
7.	Technical Modification*	\$721.00 (Including 4 hr. processing time, but no field mileage)	\$721.00 (Including 4 hr. processing time, but no field mileage)
8.	Clerical Modification (Revision of names and/or model numbers under current approval requiring no testing or examination)	\$223.00 (Including 1 hr. processing time but no field mileage)	\$223.00 (Including 1 hr. processing time but no field mileage)
9.	Multiple Listings (Additional models and product or firm names on approved products at time of application is submitted for approval or renewal)	\$57.00 each	\$57.00 each

\* The applicant shall agree in writing, as part of the application, to pay supplemental fees for processing time, field mileage, and file reopening fees where necessary. These fees are in addition to application filing fee. The department may require a deposit to cover the estimated total supplemental fees to be paid in advance. Initial applications will expire 12 months after the filing date if the equipment has not been cleared of corrections and approved. No approval shall be issued until the application is refilled and a new fee paid.

\*\* Processing time includes office and field review and testing, office and field consultation, field standby and travel time directly related to the application.

\*\*\* This fee is in addition to other fees specified in this section. The 60 day period may be extended by the department when the applicant submits written evidence to the department of a satisfactory reason for the extension.

**NOTE:** A file shall not be reopened after one year from date of expiration. The total actual fee for the application shall be determined by the department on the basis of fees established by ordinance and shall be paid by the applicant whether or not an approval is granted. Fees paid in advance which are in excess of the total actual fees are refundable.

**2. Electrical Testing Laboratory Fees**

ITEM	LABORATORY APPROVAL FEE	GENERAL APPROVAL FEE	FIELD APPROVAL FEE (one time approval)
1. Initial application filing*			
a. General purpose equipment			
(1) Simple equipment (applies only to less complex light fixtures or similar equipment)	\$694.00 (Including 4 hr. processing time but no field mileage)	\$1,389.00	\$1181.00
(2) Complex equipment and systems	\$1250.00	\$1,528.00	\$1,389.00
b. Equipment for hazardous areas			
(1) Simple equipment	N/A	\$1,389.00	N/A
(2) Complex equipment and systems	N/A	\$1,528.00	N/A
c. Medical Equipment			
(1) Simple equipment	\$1250.00	\$1,389.00	\$1250.00
(2) Complex equipment and systems	\$1,389.00	\$1,528.00	\$1,667.00
d. Equipment rated above 600 volts or above 60 Hertz (except appliances and light fixtures)			
(1) Simple equipment	N/A	\$1,389.00	\$1250.00
(2) Complex equipment and systems	N/A	\$1,528.00	\$1,667.00
<b>Note:</b> All fees for initial application filing include 8 hour processing time but no field mileage except when noted.			
2. Annual Renewal application filing*	65% of Fee (Including 4 hr. processing time but no field mileage)	65% of Fee (Including 4 hr. processing time but no field mileage)	N/A
3. Processing time exceeding amount included with application**	\$104.00/hour	\$104.00/hour	\$104.00/hour
4. Field Mileage, when required. (Mileage based on one way, straight-line distance from laboratory to test site)			
0 to 15 miles	\$41.00/trip	\$41.00/trip	\$41.00/trip
15 to 30 miles	\$55.00/trip	\$55.00/trip	\$55.00/trip
30 miles and over	\$55.00/trip plus \$1.00/mile over 30 miles	\$55.00/trip plus \$1.00/mile over 30 miles	\$55.00/trip plus \$1.00/mile over 30 miles
5. Reopening file closed because of failure to respond to correction(s) or required production sample not received within 60 days from date of notification.***	\$138.00	\$138.00	\$138.00
6. Reopening file closed because previous approval expired for more than 30 days. Approval file shall not be reopened if not renewed for more than one year after expiration date. (This fee is in addition to the renewal fee and penalty fee)	\$277.00	\$277.00	\$277.00
7. Technical Modification * <b>Note:</b> Technical Modification approval time is only up to the expiration date of the application approval. This will not set a new approval time for the application.	\$694.00 (Including 4 hr. processing time but no field mileage)	\$694.00 (Including 4 hr. processing time but no field mileage)	
8. Clerical Modification (Revision of names and/or model numbers under current approval requiring no testing or examination)	\$215.00 (Including 1 hr. processing time but no field mileage)	\$215.00 (Including 1 hr. processing time but no field mileage)	
9. Multiple Listings (Additional models and product or firm names on approved products at time of application is submitted for approval or renewal)	\$55.00 each	\$55.00 each	
10. Department Approval Labels:			
a. Paper	\$0.22	\$0.14	N/A
b. Water Proof	\$3.60	\$2.00	N/A
c. One time only			No cost

\* The applicant shall agree in writing, as part of the application, to pay supplemental fees for processing time, field mileage, and file reopening fees where necessary. These fees are in addition to application filing fee. The department requires a deposit to cover the estimated total supplemental fees to be paid in advance. Initial applications will expire 12 months after the filing date if the equipment has not been cleared of corrections and approved. No approval shall be issued until the application is refiled or reopened and the penalty fees are paid.

\*\* Processing time includes office and field review and testing, office and field consultation, field standby and travel time directly related to the application.

\*\*\* This fee is in addition to other fees specified in this section. The 60 day period may be extended by the department when the applicant submits written evidence to the department of a satisfactory reason for the extension.

**NOTE:** A file shall not be reopened after one year from date of expiration. The total actual fee for the application shall be determined by the department on the basis of fees established by ordinance and shall be paid by the applicant whether or not an approval is granted. Fees paid in advance which are in excess of the total actual fees are refundable.

- (d) **Fees.** Applications for initial approvals and renewals pursuant to Articles 2, 3, 4, 5 and 7 of Chapter IX of this code shall be accompanied by fees as follows:
- (e) **Test samples.** At the time of filing the application, unless otherwise directed in writing by the department, the applicant shall submit to the Electrical Testing Laboratory, or the Mechanical Testing Laboratory, or any testing agency as may be designated by the department, a representative production sample of the material, device, appliance or equipment to be tested and examined, unless arrangements have been made for conducting the tests and examinations on a representative production sample in the field. Additional samples shall be made available as may be required.

All wiring diagrams and additional electrical samples, including components, special ingredients, or materials required by Subsection (f) shall be made available to the department and conform to the standards which the electrical equipment must meet before approval can be considered as specified in Subsection (f). If the electrical item submitted for test is determined by the department to be within the practical range of review by the Electrical Testing Laboratory, it shall be accepted and subjected to the tests required by Subsection (f). Samples shall be removed by the applicant or his authorized agent upon notification to do so by the department, or they may be scrapped upon written authorization by the applicant. Samples unclaimed six (6) months after such notification shall be scrapped.

The department is authorized, without liability to itself or to its authorized representatives, to subject samples to destructive tests as may be required to properly evaluate the tests and examinations.

- (f) **Standards.** Equipment requiring approval for use, sale or installation which does not fall within the scope of code standards or those standards adopted by the Superintendent shall be tested for compliance with applicable portions of these standards. The Superintendent shall determine the specific standards or portions thereof to which any specific equipment must conform.
- (g) **Approvals.** Whenever any appliance, fixture or equipment has been found to comply with the provisions of this section and the applicable code, the department shall issue an approval therefor for a period of one year. This approval is subject in every case to continued compliance with the provisions of this section and any further amendments to this section, and is subject to the requirements of the applicable articles, except where such articles are in conflict herewith, and subject also in every case to any change in the test or approval requirements for any such material, device, appliance or equipment.

Items submitted for approval which fail to meet the test or examination requirements shall be corrected and resubmitted as set forth in the Mechanical Testing Laboratory or Electrical Testing Laboratory rules and regulations adopted by the Superintendent before an approval can be granted.

- (h) **Renewal of approval.** Upon expiration of an approval granted for any appliance, fixture or equipment, or upon any change in design, material, method of construction or model designation made during the period of approval, it shall be unlawful to sell, offer or advertise for sale, or install the appliance, fixture or equipment until a renewal of approval has been granted under the provisions of this section.

**Exception:** Exact duplicates of approved products, bearing the label required by this section and manufactured before the approval expires, may be offered for sale and may be installed and used in conformance with this section and Article 3 of Chapter IX of the Municipal Code (Electrical Code). No equipment, fixture or appliance manufactured after the expiration of its approval may be placed on sale until it has been examined and approved by the annual reexamination service provided by the rules and regulations or otherwise approved by laboratories designated by the Superintendent.

- (i) **Identification of approval.** Each item of material, and each device, appliance, fixture or equipment approved under the provisions of this section, shall be identified as may be required by the applicable article of Chapter IX of the *Los Angeles Municipal Code* or by standards, specifications or rules and regulations under which the approval was granted.

Each item of electrical equipment, fixture or appliance approved under this article and Article 3 of Chapter IX of the Municipal Code (Electrical Code) shall bear the approval label of the department, attached in the manner determined by the standards, or otherwise made accessible for inspection without disassembly. Approval labels may be obtained only upon the written authorization of the applicant or his authorized representative and shall be available only during the year of approval. The applicant shall be held responsible for their use. No label shall be affixed to any item not currently approved by the department, nor shall the labels be transferred to the possession of any unauthorized person.

- (j) **Inspection.** Every person selling, offering or displaying for sale, renting or installing fixtures, appliances or equipment shall make such items available for inspection upon the request of the department.

When equipment, fixtures or appliances are found not in accord with the provisions of this section or of the respective codes, the department shall give written notice to the person violating these provisions to remove them from sale or use. Any person failing to comply with the provisions of such notice shall be guilty of a misdemeanor and shall be subject to the penalties described in Section 11.00 of the *Los Angeles Municipal Code*.

Whenever the Superintendent learns or ascertains that any equipment, as defined in this code, has become hazardous to life, health or property, he shall order, in writing, that such equipment be restored to a condition of safety or be dismantled or removed from its present location. The written notice shall fix a time limit for compli-

ance with such order. No person shall use or maintain the defective equipment after receiving such notice.

- (k) **Revocation of approvals.** The Superintendent may suspend or revoke any approval if it is determined that the article which has been approved is dangerous or unsuitable for the purpose intended, or is of a quality of material or workmanship not equivalent to that required by the code or standards adopted by the Superintendent, or deviates from any of the conditions upon which the approval was granted, or for any of the reasons set forth in this article.

In any action to suspend or revoke an approval, the procedures prescribed by the provisions of this article shall be followed.

- (l) **Testing in applicants premises.** Testing in applicants premises may be conducted when the applicant submits written evidence to the department of a satisfactory reason for such tests. The applicant shall agree in writing to pay all the expense for travel, transportation, board and lodging, and other miscellaneous expense required by ordinance.

The applicant shall agree in writing, as a part of the application, to pay supplemental fees at the rate of \$110.00 per hour to cover the time of travel and processing which is in excess of the amount of time provided for in the approval, renewal or modification fee specified in this section.

The applicant shall provide all equipment required for testing and assistance for the test. The applicant shall provide a safe environment for testing, protective equipment, and materials needed for conducting the test.

- (m) **Off-hour review of appliances, fixture and equipment.** Upon request by an applicant and accepted by the department, an off-hour processing fee per Section 98.0422 of the *Los Angeles Municipal Code* may be collected for all services conducted by the Electrical and Mechanical Testing Laboratory.

### SECTION 98.0503 TESTING AGENCIES

Whenever tests or certificates of any material or fabricated assembly thereof, or of any persons, are required by this chapter, such tests or certification shall be made by a testing agency approved by the Superintendent to conduct such tests or provide such certifications. Approvals of testing agencies shall be issued for a period of one year and may be renewed for additional one-year periods.

- (a) The Superintendent shall establish rules and regulations setting forth conditions and provisions precedent to the issuance of any such approval and for the conduct of any person or agency so approved.
- (b) A fee of \$1153.00 shall accompany each application for approval and a renewal fee of \$648.00 shall accompany each application for renewal. A fee of \$450.00 shall be charged for the approval of each branch office in addition to the main office and a

renewal fee of \$252.00 shall be charged for the renewal of each branch office in addition to the main office. A fee of \$648.00 shall accompany each application for a major modification and a fee of \$252.00 shall accompany each application for clerical modification.

**Exception:** Application fees shall not be required from those agencies, which are located in the United States of America, established and operating on a nonprofit basis, and

1. which have an approved reinspection service; or
2. which are public universities, colleges or testing facilities operated by a governmental agency.

The fees for approval of new Testing Agencies include four hours of department processing time. The fees for major modifications of Testing Agencies and review of each branch testing laboratory include four hours of department processing time. The fees for renewal and clerical modifications include three hours and one and one-half hours of department processing time respectively.

The fees for application review, investigating and inspecting testing agencies for initial recognition, modifications or renewals shall be \$108.00 per hour for on-site laboratory inspections and follow-up laboratory inspections and are applicable to all testing and other types of product approval or evaluation agencies including those exempted from application fees in the foregoing exception. Such inspections performed at off-hours shall be charged a fee at the rate of one and one-half the hourly fee in this paragraph.

The applicant shall agree in writing, as part of the application, to pay supplemental fees at the rate of \$108.00 per hour to cover the time of processing which is excess of the time provided for in the approval, renewal or modification fee specified in this section.

Processing shall include those activities directly related to the approval of Testing or other product approval Agencies for which an application has been made and shall include all research, review, correspondence, clerical and consultation time pertinent to the application. The department may require an estimated supplemental fee to cover the time and travel expense which shall be paid at the time of filing the application and/or before any travel to laboratories outside of the State of California; however, the supplemental fee shall be paid in full prior to final action on the application by the department. The fees specified in this section, including supplemental fees, and application fees are not refundable once work has been performed by the department, regardless of whether the action taken is approved or denied.

**Exception:** Supplemental fees paid in advance, which are in excess of the total actual fee shall be refundable.

Initial applications, modifications, renewals and branch approvals shall expire 12 months after the department has started work on the application if the request for approval of a testing agency has not been cleared of corrections and approved. No approval shall be issued until the application is filed and a new fee paid.

**Exception:** The department or the board on appeal may grant extensions of time if an applicant submits in writing sufficient evidence that unusual conditions or circumstances precluded the approval within the allocated time, provided that such appeals are submitted within the time period required by Section 98.0501(d)2.

- (c) The Superintendent may suspend or revoke an approval upon evidence of failure of the agency or person so approved to properly conduct any test or certify any material or assembly of material in a manner required by Chapter 9, or for any of the reasons set forth in this article. In any action to suspend or revoke an approval, the procedure prescribed by the provisions of this article shall be followed.
- (d) In order to determine compliance with applicable rules or regulations, the Superintendent may inspect the premises of any testing agency approved or seeking Superintendent approval. Such inspection shall be conducted during regular working hours and at other reasonable times.

The Superintendent or his authorized representatives may, during the course of any investigation or inspection, obtain statistics, information or, other physical materials which are directly related to the purpose of the investigation or inspection.

The Superintendent may collect fees for the inspection of a testing agency as necessary to cover the actual cost of having an initial inspection performed.

An additional fee may, in the discretion of the Superintendent, be charged for necessary subsequent inspections to determine if applicable ordinances, rules, or regulations governing testing agencies have been and are being met.

The initial application for approval, and the renewal application shall include a statement that the applicant agrees to pay all inspection charges imposed pursuant to this subsection.

Whenever an inspection is conducted by department personnel at facilities located more than 60 miles from Los Angeles City Hall, the applicant shall reimburse the City of Los Angeles for the cost thereof in accordance with the same charges as imposed for automobile and air travel, per diem and travel time as specified in Subsection 96.204(i) for inspection of fabrication facilities. These charges are the same for inspections initiated by the department or requested by the applicant and are to be paid by the testing agency.

## SECTION 98.0504 ENVIRONMENTAL REPORTS

- (a) A processing fee of \$600.00 shall be charged each applicant when the department is required to perform an initial study or a negative declaration, to comply with the California Environmental Quality Act (CEQA). This fee shall include eight (8) hours of processing time.
- (b) A processing fee of \$1200.00 shall be charged each applicant when the department is required to perform a mitigated negative declaration or Environmental Impact Report, to comply with the California Environmental Quality Act (CEQA) and shall be in addition to the fee charged for an initial study or a negative declaration. This fee shall include twelve (12) hours of processing time.
- (c) The department shall charge the applicant hourly fees for all staff time over the minimum number of hours specified above. The fee shall be \$75.00 per hour or fraction thereof for each additional hour involving the project California Environmental Quality Act (CEQA) review.



# DIVISION 6 — EXPIRATION AND REVOCATION OF PERMITS, PLAN CHECK AND SLIGHT MODIFICATIONS AND ALTERNATIVES

## SECTION 98.0601 PURPOSE

The purpose of this division is to establish requirements and procedures for the revocation by the Department of permits issued by the department and to establish time limits for the validity of permits, plan checks and slight modifications.

### (a) Department authority.

1. The department shall have the authority to revoke any permit, slight modification, determination granted or made in reliance on a false statement or misrepresentation as to a material fact.
2. The department shall have the authority to revoke any permit, slight modification, or determination whenever such action was granted in error or in violation of other provisions of the code and conditions are such that the action should not have been allowed.

- ### (b) Board authority.
- The board shall have the authority to revoke any slight modification, or determination granted or made by the board in reliance on a false statement or misrepresentation as to a material fact. The board shall also have the authority to revoke any slight modification, determination granted or made by the board whenever such action was granted in error or in violation of other provisions of the code and conditions are such that the action should not have been allowed.

## SECTION 98.0602 EXPIRATION OF PERMITS

- (a) Every permit issued shall be valid for a period of two years from the date thereof, provided that any permit shall expire 12 months from date of issuance if the work authorized under any permit associated to the current scope of work has not been commenced; or shall expire whenever the Department determines the work authorized by any permit has been suspended, discontinued or abandoned for a continuous period of 12 months. (See Health and Safety Code Sections 18938.5 and 18938.6.)

### Exceptions:

1. If the holder of any permit issued by the Department presents satisfactory evidence that unusual construction difficulties have prevented work from being started or continued without being suspended with the one-year time period or completed within the two-year period of validity, the department or the Board may grant extensions of time reasonably necessary because of such difficulties.

2. If the permit(s) is related to or for a residential occupancy issued by the Department, and if the work authorized under any permit associated to the current scope of work for said residential occupancy has not been commenced, the permit(s) shall expire within 12 months after issuance. If the holder of any permit concerning residential occupancy issued by the Department presents satisfactory evidence that unusual construction difficulties have prevented work from being started or continued without being suspended with the 12-month time period or completed within the two-year period of validity, the Department or the Board may grant extensions of time reasonably necessary because of such difficulties.

Notwithstanding the provisions of this subsection, the validity of a permit may be further restricted in the following conditions:

1. In the case that a building or structure has been ordered repaired or demolished in accordance with LAMC Section 91.8903, 91.8904 or 91.8905, such time limits as are specified therein shall apply.
  2. The Department or the Board may, because of unusual circumstances or conditions such as, but not limited to, the demolition of an imminently hazardous building, or a grading operation which may be subject to flooding during the rainy season, impose restrictions upon the time limits for expiration of any permit.
  3. The time limit for the validity of relocation permits shall be as specified in LAMC Section 91.8306.
  4. The time limit for the validity of tent permits shall be as specified in LAMC Subdivision 91.106.1.3.
  5. The time limit for the validity of permits for the installation of metal bars, grills, grates, security roll-down shutters, and similar devices, and of quick-release systems shall be as specified in LAMC Subdivision 91.107.4.5.
  6. The time limit of validity of permits for temporary signs on temporary construction walls, or for temporary signs on a fence of solid wood or similar material surrounding a vacant lot, issued pursuant to the provisions of Section 14.4.17, shall be as specified in Subsection 14.4.17 C. of the Los Angeles Municipal Code.
- (b) Permits which have expired shall have the site, building or project restored to the condition which existed

immediately prior to the commencement of work described by such permit.

- (c) It shall be unlawful for any owner, either before or after the issuance of a permit under this section, and notwithstanding the issuance of such permit, to fail to comply with any order, determination or action of the Department or Board.

#### **SECTION 98.0603 EXPIRATION OF PLAN CHECK**

If a permit is not secured within 18 months after plans have been filed for checking such plan check shall expire and no permit shall be issued until the plans are rechecked and approved and a new plan check fee paid.

**Exception:** The department or the board may grant extensions of time if a permit applicant submits in writing sufficient evidence that unusual conditions or circumstances precluded the securing of the permit within the allocated time.

#### **SECTION 98.0604 EXPIRATION OF SLIGHT MODIFICATIONS AND ALTERNATIVES**

The rights and privileges granted by the department or the board under a slight modification shall be voided if the permit is not secured within 18 months of the date the modification was granted or if the permit expires under any of the conditions specified in Section 98.0602 of the *Los Angeles Municipal Code*.

**Exception:** The department or the board may grant extensions of time if a permit applicant submits in writing substantial evidence that unusual conditions or circumstances precluded the securing of the permit within the allocated time or caused the permit to expire as specified in Section 98.0603 of the *Los Angeles Municipal Code*.

#### **SECTION 98.0605 TIME LIMITS OF REQUESTS FOR EXTENSION**

Requests for extensions of time on the expiration times of permits, plan checks, slight modifications shall not be made not later than 90 days after the expiration time specified in this division.

## DIVISION 7 — ABATEMENT OF VACANT BUILDINGS

### SECTION 98.0701 DECLARATION OF PURPOSE

The Council of the City of Los Angeles finds and declares that:

- (a) Structures that are vacant and unsecured or barricaded attract vagrants, gang members and other criminals as prime locations to conduct illegal criminal activities.
- (b) Structures that are vacant and not properly secured are extremely vulnerable to being set on fire by unauthorized persons.
- (c) Structures that are vacant and unsecured or barricaded are a blight and cause deterioration and instability in neighborhoods.
- (d) Structures that are vacant and unsecured or barricaded pose serious threats to the public's health and safety and therefore are declared to be public nuisances.
- (e) Immediate abatement and rehabilitation of these structures is necessary and can be accomplished by using the judicial or administrative procedures found in this code.

### SECTION 98.0702 DEFINITIONS

The following words and phrases, whenever used in this division, shall be construed as defined in this section. Words and phrases not defined herein shall be construed as defined in Sections 12.03 and 91.201, *et seq.* of this code.

**“Responsible Person”** means the owner and/or person in charge or control of the Vacant Structure.

**“Superintendent”** means the General Manager of the Department of Building and Safety or his or her duly authorized representative.

**“Statement of Intent”** means a form filled out by the responsible person of a Vacant Structure which contains specific information regarding the structure and the owner's plan for its rehabilitation and maintenance, or demolition.

**“Vacant Structure”** means any structure or building that:

- 1) is unoccupied or occupied by unauthorized persons; and
- 2) is unsecured or barricaded.

### SECTION 98.0703 ENFORCEMENT AUTHORITY

The Superintendent is authorized to administer and enforce the provisions of this division. The Superintendent or anyone designated by the Superintendent may exercise any enforcement powers as provided in Chapter IX of this code.

### SECTION 98.0704 ENFORCEMENT REMEDIES

Violations of this division may be prosecuted as misdemeanors subject to the fines and custody provided in Section 11.00(m) of this code. The Superintendent may also seek injunctive relief and civil penalties in the Superior Court pursuant to Section 98.0716 of this code or pursue any administrative remedy provided in Chapter IX of this code.

### SECTION 98.0705 STRICT LIABILITY OFFENSES

Violations of this division shall be treated as strict liability offenses regardless of intent.

### SECTION 98.0706 DUTY TO CLEAN, FENCE AND BARRICADE

- (a) It is unlawful for the Responsible Person to fail to remove any waste, rubbish, debris, flammable, combustible, or hazardous materials from the interior of the Vacant Structure.
- (b) It is unlawful for the Responsible Person to fail to remove any waste, rubbish, debris, excessive vegetation, inoperable vehicles, trailers, appliances, and any other similar materials from the yards surrounding the Vacant Structure.
- (c) It is unlawful for the Responsible Person to fail to lock, barricade or secure all doors, windows, damaged walls, roofs, foundations and other openings of the Vacant Structure.
- (d) It is unlawful for the Responsible Person to fail to fence the entire lot containing the Vacant Structure.
- (e) It is unlawful for the Responsible Person to fail to post the property containing the Vacant Structure with signs stating **“THIS PROPERTY CLOSED TO THE PUBLIC”** in accordance with Section 41.24 of this code.
- (f) It is unlawful for the Responsible Person to fail to file written trespass authorization request with the police department pursuant to Section 41.24(g) of this code to authorize a peace officer's assistance in removing trespassers from the property containing the Vacant Structure.

### SECTION 98.0707 ADMINISTRATIVE ABATEMENT PROCEDURES FOR VACANT AND UNSECURED STRUCTURES

- (a) Whenever the Superintendent determines that a vacant and unsecured structure exists within the City of Los Angeles, an abatement notice and order may be sent to the Responsible Person directing abatement by cleaning,

fencing and securing or barricading. Barricading and fencing shall be done pursuant to the standards established in Section 91.8904.1 of this code.

- (b) The Superintendent shall follow the administrative abatement procedures set forth in Division 89 of Article 1 of Chapter IX of this code.
- (c) If the Responsible Person does not comply with the abatement notice and order, and no appeal is filed, the Superintendent may:
  - 1) clean, remove graffiti, fence, and barricade the unsecured Vacant Structure;
  - 2) post the property containing the Vacant Structure pursuant to Section 98.0714 of this code; and
  - 3) recover all costs pursuant to the procedures set forth in Division 89 of Article 1 of Chapter IX of this code.

#### **SECTION 98.0708 STANDARDS FOR FENCING AND BARRICADING A VACANT STRUCTURE**

The Responsible Person shall barricade the Vacant Structure according to the following specifications and requirements:

- (a) Remove all waste, rubbish, debris, flammable, combustible, or hazardous materials from the interior of the structure; and
- (b) Remove all waste, rubbish, debris, excessive vegetation, inoperable vehicles, trailers, appliances, and any other similar materials from the yards surrounding the Vacant Structure; and
- (c) Barricade all unsecured doorways, windows, damaged walls, roofs, foundations or exterior openings in accordance with the requirements of Division 89 of Article 1 of Chapter IX of this code; and
- (d) Fence the entire lot surrounding the Vacant Structure in accordance with the requirements of Division 89 of Article 1 of Chapter IX of the code; and
- (e) Post the property containing the Vacant Structure with signs stating that the property is closed to the general public in accordance with the requirements of Section 41.24 of this code.

#### **SECTION 98.0709 ENTRY OR INTERFERENCE WITH NOTICE PROHIBITED**

- (a) It is unlawful for any person to enter or occupy any structure or premises which has been posted pursuant to Section 91.8903.1.5, 91.8904.1, or 98.0708(e) of this code, except to repair or demolish the structure under proper permit or for a purpose authorized by the owner.
- (b) It is unlawful for any person to remove or deface any notice posted pursuant to Section 91.8903.1.5, 91.8904.1, 98.0708(e) or 98.0714 of this code.

#### **SECTION 98.0710 CONTINUOUS ABATEMENT AUTHORITY**

- (a) If a Vacant Structure, previously abated by the Responsible Person or the Superintendent pursuant to a notice and order, again becomes unsecured and open to unauthorized entry, the Superintendent may proceed to abate the nuisance and recover costs pursuant to Division 89 of Article 1 of Chapter IX of this code.
- (b) If the yards surrounding a Vacant Structure, previously abated by the Responsible Person or the Superintendent pursuant to a notice and order, again contain graffiti, waste, rubbish, debris, excessive vegetation, inoperable vehicles, trailers, appliances, and any other similar materials, the Superintendent may proceed to abate the nuisance and recover costs pursuant to Division 89 of Article 1 of Chapter IX of this code.

#### **SECTION 98.0711 ABATEMENT COST**

- (a) Abatement costs shall include the cost to perform the actual work and the city's cost to administer any abatement.
- (b) Once the abatement is complete, the Superintendent shall recover all abatement costs pursuant to the procedure found in Division 89 of Article 1 of Chapter IX of this code.

#### **SECTION 98.0712 CONTINUOUS PUBLIC NUISANCES**

Any Vacant Structure that was originally secured by the Responsible Person's voluntary actions or pursuant to administrative or judicial order may be declared a permanent public nuisance by the Superintendent if the structure subsequently becomes open and unsecured, thereby requiring additional reinspection and resecuring of the structure by either the Responsible Person or the Superintendent. The Superintendent may seek demolition of this continuous public nuisance by seeking a court order or by following any of the administrative abatement procedures set forth in Division 89 of Article 1 of Chapter IX of this code.

#### **SECTION 98.0713 DUTY TO FILE A STATEMENT OF INTENT**

- (a) The Superintendent shall create and make available a form entitled "**Statement of Intent**" to be completed by the Responsible Person.
- (b) The Responsible Person shall complete the information required on the standard Statement of Intent and submit the Statement to the city within 30 days of the date the Superintendent determines that the structure meets the definition of a Vacant Structure.
- (c) The Superintendent shall determine whether a submitted Statement of Intent is complete and may require the Responsible Person to provide more complete information.

- (d) When a submitted Statement of Intent does not meet with the Superintendent's approval, the Responsible Person shall immediately correct and resubmit the Statement of Intent.
- (e) The Statement of Intent shall include all of the following information as to:
  - (1) expected period of vacancy; and
  - (2) a plan for regular maintenance during the period of vacancy; and
  - (3) a plan and time line for the lawful occupancy, rehabilitation or demolition of the barricaded structure; and
  - (4) any additional information required by the Superintendent.
- (f) It is unlawful to:
  - (1) fail to submit a Statement of Intent within the time period specified by Subsection (b) of this section; or
  - (2) submit a Statement of Intent which does not meet with the approval of the Superintendent or otherwise comply with the requirements of this section.

#### **SECTION 98.0714 POSTING NAME OF RESPONSIBLE PERSON**

The Responsible Person shall permanently affix, in a conspicuous place on the Vacant Structure, a notice stating the name, address, and telephone number of both the owner and the owner's agent in charge or control of the Vacant Structure. If the Responsible Person fails to affix this notice on the Vacant Structure within 30 days of the date the Superintendent determines that the structure meets the definition of a Vacant Structure, then the department may cause the same to be permanently affixed to the Vacant Structure, using the name, address and telephone number for the owner(s) as shown on a title report obtained from either the Division of Real Estate, Bureau of Engineering, Department of Public Works, City of Los Angeles or by contracting with one or more private title reporting agencies. Said title report shall list all persons shown on the records of the County Recorder as having an ownership interest or liens or encumbrances or other interests in the real property on which the Vacant Structure is located.

#### **SECTION 98.0715 REINSPECTION FEE**

The Superintendent may periodically reinspect Vacant Structures to ensure compliance with the provisions of this division and all applicable court and administrative orders. The Superintendent may impose a reinspection fee against the Responsible Person for actual costs of each reinspection and continuous monitoring of the structure and premises as is reasonably necessary to determine compliance with the standards and procedures in this division. The Superintendent shall follow the procedures set forth in Sections 91.8904.3, 98.0411 or 98.0412 of this code.

#### **SECTION 98.0716 VACANT STRUCTURE PENALTY**

- (a) Any Responsible Person in charge of a structure which meets the definition of a Vacant Structure as provided in this division for 30 consecutive calendar days may be liable for a civil penalty in the amount of \$1000 per structure, not to exceed \$100,000 per calendar year unless:
  - (1) A Statement of Intent has been filed and approved by the Superintendent; and
  - (2) The building has been posted as required by Section 98.0714 of this code; and
  - (3) One of the following applies:
    - (A) The structure is the subject of an active building permit for repair, rehabilitation or demolition and the owner is proceeding diligently in good faith to complete the repair, rehabilitation or demolition; or,
    - (B) The structure is maintained in compliance with this division and is actively being offered for sale, lease or rent; or,
    - (C) The Responsible Person can demonstrate that he or she made a diligent and good faith effort to implement the actions set forth in the approved Statement of Intent within the time line contained within the Statement of Intent.
- (b) If the structure continues to meet the definition of Vacant Structure as provided in this division beyond the initial 30 calendar days, and if the Responsible Person does not meet any of the exceptions set forth in this section, the Superintendent may continue to impose a penalty of \$1000 per structure for each calendar day the structure continues to constitute a Vacant Structure, subject to the limitations set forth in LAMC Section 164.09 pursuant to the notice requirements to this division. At no time may the amount of the civil penalty exceed \$100,000 per property in a calendar year.

#### **SECTION 98.0717 PROCEDURES FOR BARRICADED AND VACANT STRUCTURE PENALTY**

- (a) Whenever the Superintendent determines that a structure meets the definition of a Vacant Structure as provided in this division for more than 30 consecutive calendar days, and the Responsible Person does not meet any of the exceptions set forth in Section 98.0716(a), a 30-day Notice of Barricaded and Vacant Structure Penalty may be issued to the Responsible Person, and any other person listed in the title report as having an interest in the real property. The Notice of Barricaded and Vacant Structure Penalty shall include a description of the conditions that gave rise to the penalty and notice of the City's intent to assess an administrative penalty pursuant to LAMC Section 98.0716 if action to correct the violation is not commenced within a period of not less than 14 days from the date the Notice is mailed, and completed within a period of not less than 30 days from the date the Notice is mailed.

- <sup>L</sup>  
<sup>A</sup> (b) A separate 30-day Notice of Barricaded and Vacant Structure Penalty shall be issued for each subsequent penalty that may be imposed pursuant to Section 98.0716.
- (c) The Notice of Barricaded and Vacant Structure Penalty shall be served on each required person by any one of the methods of service listed in Section 91.8903.3.4 of this code.

**SECTION 98.0718**  
**APPEAL OF BARRICADED**  
**AND VACANT STRUCTURE PENALTY**

An appeal of a Barricaded and Vacant Structure Penalty shall follow the procedures set forth in Section 98.0411 of this code.

**SECTION 98.0719**  
**ADMINISTRATIVE ENFORCEMENT HEARING**

- (a) The appeal hearing shall follow the enforcement hearing procedures set forth in Section 98.0403.2(b) of this code.
- (b) The board shall only consider evidence that is relevant to the following issues:
- (1) Whether the structure meets the definition of Vacant Structure as provided in this division for 90 consecutive calendar days;
  - (2) Whether an approved Statement of Intent has been filed and approved by the Superintendent; and
  - (3) Whether any of the exceptions set forth in Section 98.0716(a)(3)(A) through (C) have been met.
- (c) The board may impose administrative costs.

**SECTION 98.0720**  
**FAILURE TO PAY PENALTIES**

The failure of any person to pay the penalty within the time specified in the Notice of Barricaded and Vacant Structure Penalty may result in the Superintendent using any legal means to recover the civil penalties, including filing a claim with the Small Claims Court or following the procedures set forth in Section 91.8906 of this code.

**SECTION 98.0721**  
**ALLOCATION OF VACANT BUILDING PENALTY**

Administrative civil penalties collected pursuant to this division shall be deposited in the appropriate fund as determined by the Superintendent.

## Chapter XI, Article 1

# NOISE REGULATION

### SECTION 111.00 DECLARATION OF POLICY

It is hereby declared to be the policy of the city to prohibit unnecessary, excessive and annoying noises from all sources subject to its police power. At certain levels noises are detrimental to the health and welfare of the citizenry and in the public interests shall be systematically proscribed.

### SECTION 111.01 DEFINITIONS

Unless the context otherwise clearly indicates, the words and phrases used in this chapter are defined as follows:

- (a) “**Ambient Noise**” is the composite of noise from all sources near and far in a given environment, exclusive of occasional and transient intrusive noise sources and of the particular noise source or sources to be measured. Ambient noise shall be averaged over a period of at least 15 minutes at a location and time of day comparable to that during which the measurement is taken of the particular noise source being measured.
- (b) “**Commercial Purpose**” is the use, operation, or maintenance of any sound amplifying equipment for the purpose of advertising any business, goods, or services, or for the purpose of attracting the attention of the public to, advertising for, or soliciting patronage or customers to or for any performance, show, entertainment, exhibition, or event, or for the purpose of demonstrating such sound equipment.
- (c) “**Decibel**” (dB) is a unit of level which denotes the ratio between two (2) quantities which are proportional to power; the number of decibels corresponding to the ratio of two (2) amounts of power is ten (10) times the logarithm to the base (10) of this ratio.
- (d) “**Emergency Work**” is work made necessary to restore property to a safe condition following a public calamity or work required to protect persons or property from an imminent exposure to danger, or work by private or public utilities when restoring utility service.
- (e) “**Impulsive Sound**” is sound of short duration, usually less than one second, with an abrupt onset and rapid decay. By way of example “impulsive sound” shall include, but shall not be limited to, explosions, musical base drum beats, or the discharge of firearms.
- (f) “**Motor Vehicle**” includes, but shall not be limited to, automobiles, trucks, motorcycles, minibikes and go-carts.
- (g) “**Noncommercial Purpose**” is the use, operation, or maintenance of any sound equipment for other than a “commercial purpose”. “Noncommercial purpose” shall mean and include, but shall not be limited to, philanthropic, political, patriotic, and charitable purposes.
- (h) “**Octave Band Noise Analyzer**” is an instrument for measurement of sound levels in octave frequency bands which satisfies the pertinent requirements for Class II octave band analyzers of the American National Standard Specifications for Octave, Half-Octave, and Third-Octave Band Filters, S1.11-1966 or the most recent revision thereof.
- (i) “**Person**” is a person, firm, association, co-partnership, joint venture, corporation, or any entity, private or public in nature.
- (j) “**Sound Amplifying Equipment**” is any machine or device for the amplification of the human voice, music or any other sound, but shall not include:
  - 1. Automobile radios, stereo players or television receivers when used and heard only by the occupants of the vehicle in which the same is installed.
  - 2. Radio, stereo players, phonographs or television receivers used in any house or apartment within any residential zone or within 500 feet thereof.
  - 3. Warning devices on emergency vehicles.
  - 4. Horns or other warning devices authorized by law on any vehicle when used for traffic purposes.
- (k) “**Sound Level**” (Noise level) in decibels (dB) is the sound measured with the “A” weighting and slow responses by a sound level meter; except for impulsive or rapidly varying sounds, the fast response shall be used.
- (l) “**Sound Level Meter**” is an instrument including a microphone, an amplifier, an output meter, and “A” frequency weighting network for the measurement of sound levels which satisfies the pertinent requirements for Type S2A meters in American Standard Specifications for sound level meters in S1.4-1971 or the most recent revision thereof.
- (m) “**Sound Truck**” is any motor vehicle, or any other vehicle regardless of motive power, whether in motion or stationary, which carries, is equipped with, or which has mounted thereon, or attached thereto, any sound amplifying equipment.
- (n) **Supplementary Definitions of Technical Terms.** Definitions of technical terms not defined herein shall be obtained from American Standard Acoustical Terminology S1-1-1971 or the most recent revision thereof.

### SECTION 111.02 SOUND LEVEL MEASUREMENT PROCEDURE AND CRITERIA

- (a) Any sound level measurement made pursuant to the provisions of this chapter shall be measured with a sound level meter using the “A” weighting and response as indicated in Section 111.01(k) of this article.

Except when impractical, the microphone shall be located four to five feet above the ground and ten feet or more from the nearest reflective surface. However, in those cases where another elevation is deemed appropriated, the latter shall be utilized.

Interior sound level measurements shall be made at a point at least four feet from the wall, ceiling, or floor nearest the noise source.

Calibration of the sound level meter, utilizing an acoustic calibrator shall be performed immediately prior to recording any sound level data. The ambient noise level and the level of a particular noise being measured shall be the numerical average of noise measurements taken at a given location during a given time period.

(b) Where the sound alleged to be offending is of a type or character set forth below, the following values shall be added to the sound level measurement of the offending noise:

1. Except for noise emanating from any electrical transformer or gas metering and pressure control equipment existing and installed prior to the effective date of the ordinance enacting this chapter, any steady tone with audible fundamental frequency or overtones have 200 Hz +5.
2. Repeated impulsive noise +5.
3. Noise occurring more than 5 but less than 15 minutes in any period of 60 consecutive minutes between the hours of 7:00 a.m. and 10:00 p.m. of any day -5.

4. Noise occurring five minutes or less in any period of 60 consecutive minutes, between the hours of 7:00 a.m. and 10:00 p.m. of any day -5.

(c) For those cases where an objectionable noise is clearly audible, but where the level of ambient noise does not permit direct quantitative sound level "A" measurements of the objectionable noise, sound measurements may be performed utilizing an octave band sound analyzer to determine sound level "A" limits as indicated in the Table I below. This table is used to convert the sound pressure level meter readings in dB for each band to SPL in dB(A) for each band.

#### SECTION 111.03 MINIMUM AMBIENT NOISE LEVEL

Where the ambient noise level is less than the presumed ambient noise level designated in this section, the presumed ambient noise level in this section shall be deemed to be the minimum ambient noise level for purposes of this chapter.

#### SECTION 111.04 VIOLATIONS: ADDITIONAL REMEDIES, INJUNCTIONS

As an additional remedy, the operation or maintenance of any device, instrument, vehicle, or machinery in violation of any provision of this chapter, which operation or maintenance causes discomfort or annoyance to reasonable persons or which endangers the comfort, repose, health, or peace of resi-

**TABLE I**  
**OCTAVE BAND NOISE VALUES CORRESPONDING TO SOUND LEVEL "A" VALUES**

SOUND LEVEL	OCTAVE BAND SOUND PRESSURE LEVEL dB re .0002 dyno/cm <sup>2</sup> OCTAVE BAND CENTER FREQUENCY IN Hz								
	31.5	63	125	250	500	1000	2000	4000	8000
A	31.5	63	125	250	500	1000	2000	4000	8000
35	58	50	42	35	32	29	26	23	20
40	61	54	46	40	37	34	31	28	25
45	64	58	51	45	42	39	36	33	30
50	67	61	55	50	47	44	41	38	35
55	70	64	60	55	52	49	46	43	40
60	73	68	64	60	57	54	51	48	45
65	76	72	68	65	62	59	56	53	50
70	79	76	73	70	67	64	61	58	55
75	84	81	78	75	72	69	66	63	60

**TABLE II**  
**SOUND LEVEL "A" DECIBELS**

(In this chart, daytime levels are to be used from 7:00 a.m. to 10:00 p.m. and nighttime levels from 10:00 p.m. to 7:00 a.m.)

ZONE	PRESUMED AMBIENT NOISE LEVEL (dB(A))	
	Day	Night
A1, A2, RA, RE, RS, RD, RW1, RW2, R1, R2, R3, R4, and R5	50	40
P, PB, CR, C1, C1.5, C2, C4, C5, and CM	60	55
M1, MR1, and MR2	60	55
M2 and M3	65	65

At the boundary line between two zones, the presumed ambient noise level of the quieter zone shall be used.



dents in the area, shall be deemed and is declared to be a public nuisance and may be subject to abatement summarily by a restraining order or injunction issued by a court order of competent jurisdiction.

#### **SECTION 111.05 ENFORCEMENT, CITATIONS**

- (a) The Department of Building and Safety shall have the power and duty to enforce the following noise control provisions of this code: Section 12.14A-6(h), Section 12.19A-4(b)(1), Section 112.02 and Section 112.04(c).
- (b) The Police Department shall have the power and duty to enforce the following noise control provisions of this code: Section 41.32, Section 41.40, Section 41.42, Section 41.44, Section 41.57, Section 63.51(m), Section 112.01, Section 112.04, Section 112.05, Section 112.06, Section 113.01, Section 114.01 through Section 114.05, inclusive, Section 115.02, and Section 116.01.
- (c) Any Building Mechanical Inspector assigned to noise enforcement inspection shall have the power, authority and immunity of a public officer and employee, as set forth in the Penal Code of the State of California, Section 836.5, to make arrests without a warrant whenever such employee has reasonable cause to believe that the person to be arrested has committed a misdemeanor in his presence which is a violation of any provision set forth in Section 111.05(a) of this chapter. The provisions of said Penal Code section regarding issuance of a written promise to appear shall be applicable to arrests authorized herein.

## Article 2

**SPECIAL NOISE SOURCES****SECTION 112.01  
RADIOS, TELEVISION SETS,  
AND SIMILAR DEVICES**

- (a) It shall be unlawful for any person within any zone of the city to use or operate any radio, musical instrument, phonograph, television receiver, or other machine or device for the producing, reproducing or amplification of the human voice, music, or any other sound, in such a manner, as to disturb the peace, quiet, and comfort of neighbor occupants or any reasonable person residing or working in the area.
- (b) Any noise level caused by such use or operation which is audible to the human ear at a distance in excess of 150 feet from the property line of the noise source, within any residential zone of the city or within 500 feet thereof, shall be a violation of the provisions of this section.
- (c) Any noise level caused by such use or operation which exceeds the ambient noise level on the premises of any other occupied property, or if a condominium, apartment house, duplex, or attached business, within any adjoining unit, by more than five (5) decibels shall be a violation of the provisions of this section.

**SECTION 112.02  
AIR CONDITIONING, REFRIGERATION,  
HEATING, PUMPING, FILTERING EQUIPMENT**

- (a) It shall be unlawful for any person, within any zone of the city to operate any air conditioning, refrigeration or heating equipment for any residence or other structure or to operate any pumping, filtering or heating equipment for any pool or reservoir in such manner as to create any noise which would cause the noise level on the premises of any other occupied property or if a condominium, apartment house, duplex, or attached business, within any adjoining unit to exceed the ambient noise level by more than five (5) decibels.
- (b) This section shall not be applicable to emergency work as defined in Section 111.01(c) of this chapter, or to periodic maintenance or testing of such equipment reasonably necessary to maintain such equipment in good working order.

**SECTION 112.03  
CONSTRUCTION NOISE**

Noise due to construction or repair work shall be regulated as provided by Section 41.40 of this code.

**SECTION 112.04  
POWERED EQUIPMENT INTENDED FOR  
REPETITIVE USE IN RESIDENTIAL AREAS AND  
OTHER MACHINERY, EQUIPMENT, AND DEVICES**

- (a) Between the hours of 10:00 p.m. and 7:00 a.m. of the following day, no person shall operate any lawn mower, backpack blower, lawn edger, riding tractor, or any other machinery, equipment, or other mechanical or electrical device, or any hand tool which creates a loud, raucous or impulsive sound, within any residential zone or within 500 feet of a residence.
- (b) Except as to the equipment and operations specifically mentioned and related elsewhere in this Chapter or for emergency work as that term is defined in Section 111.01(d), and except as to aircraft, tow tractors, aircraft auxiliary power units, trains and motor vehicles in their respective operations governed by State or federal regulations, no person shall operate or cause to be operated any machinery, equipment, tools, or other mechanical or electrical device, or engage in any other activity in such manner as to create any noise which would cause the noise level on the premises of any other occupied property, or, if a condominium, apartment house, duplex, or attached business, within any adjoining unit, to exceed the ambient noise level by more than five (5) decibels.
- (c) Notwithstanding the provisions of Subsection (a) above, no gas powered blower shall be used within 500 feet of a residence at anytime. Both the user of such a blower as well as the individual who contracted for the services of the user, if any, shall be subject to the requirements of and penalty provisions for this ordinance. Violation of the provisions of this subsection shall be punishable as an infraction in an amount not to exceed One Hundred Dollars (\$100.00), notwithstanding the graduated fines set forth in LAMC § 11.00(m).

**SECTION 112.05  
MAXIMUM NOISE LEVEL OF POWERED  
EQUIPMENT OR POWERED HAND TOOLS**

Between the hours of 7:00 a.m. and 10:00 p.m., in any residential zone of the city or within 500 feet thereof, no person shall operate or cause to be operated any powered equipment or powered hand tool that produces a maximum noise level exceeding the following noise limits at a distance of 50 feet therefrom:

- (a) 75dB(A) for construction, industrial, and agricultural machinery including crawler-tractors, dozers, rotary drills and augers, loaders, power shovels, cranes, derricks, motor graders, paving machines, off-highway trucks, ditchers, trenchers, compactors, scrapers, wagons, pave-

ment breakers, compressors and pneumatic or other powered equipment;

- (b) 75dB(A) for powered equipment of 20 HP or less intended for infrequent use in residential areas, including chain saws, log chippers and powered hand tools;
- (c) 65dB(A) for powered equipment intended for repetitive use in residential areas, including lawn mowers, backpack blowers, small lawn and garden tools and riding tractors;

The noise limits for particular equipment listed above in (a), (b) and (c) shall be deemed to be superseded and replaced by noise limits for such equipment from and after their establishment by final regulations adopted by the Federal Environmental Protection Agency and published in the Federal Register.

Said noise limitations shall not apply where compliance therewith is technically infeasible. The burden of proving that compliance is technically infeasible shall be upon the person or persons charged with a violation of this section. Technical infeasibility shall mean that said noise limitations cannot be complied with despite the use of mufflers, shields, sound barriers and/or other noise reduction device or techniques during the operation of the equipment.

#### **SECTION 112.06 PLACES OF PUBLIC ENTERTAINMENT**

It shall be unlawful for any person to operate, play, or to permit the operation or playing of any radio, television receiver, phonograph, musical instrument, sound amplifying equipment, or similar device which produces, reproduces, or amplifies sound in any place of public entertainment at a sound level greater than 95dB(A) at any point that is normally occupied by a customer, unless a conspicuous and legible sign is located outside such place, near each public entrance, stating:

“WARNING: SOUND LEVELS WITHIN MAY CAUSE HEARING IMPAIRMENT.”

## Article 6

# GENERAL NOISE

### SECTION 116.01

#### LOUD, UNNECESSARY AND UNUSUAL NOISE

Notwithstanding any other provisions of this chapter and in addition thereto, it shall be unlawful for any person to willfully make or continue, or cause to be made or continued, any loud, unnecessary, and unusual noise which disturbs the peace or quiet of any neighborhood or which causes discomfort or annoyance to any reasonable person of normal sensitivity residing in the area. The standard which may be considered in determining whether a violation of the provisions of this section exists may include, but not be limited to, the following:

- (a) The level of noise;
- (b) Whether the nature of the noise is usual or unusual;
- (c) Whether the origin of the noise is natural or unnatural;
- (d) The level and intensity of the background noise, if any;
- (e) The proximity of the noise to residential sleeping facilities;
- (f) The nature and zoning of the area within which the noise emanates;
- (g) The density of the inhabitation of the area within which the noise emanates;
- (h) The time of the day and night the noise occurs;
- (i) The duration of the noise;
- (j) Whether the noise is recurrent, intermittent, or constant; and
- (k) Whether the noise is produced by a commercial or non-commercial activity.

## Los Angeles Administrative Code Division 19, Chapter 10

# PROCEDURE FOR THE REMOVAL OF ILLEGAL SIGNS

### SECTION 19.100 DEFINITIONS

For purposes of this chapter, the following terms are defined. **Illegal sign** shall mean any sign or sign structure installed, maintained or existing on vacant private property in violation of any law. **Owner** shall mean the owner or owners of real property as shown on the last Equalized Assessment Roll of Los Angeles County. **Vacant private property** shall mean any single lot or parcel of land described in the records of the County Recorder, held under Private ownership, which has not been improved by any lawfully erected permanent building or structure.

### SECTION 19.101 ILLEGAL SIGNS – NUISANCE

It is hereby found and determined that all illegal signs are a public nuisance to be abated as in this chapter provided.

### SECTION 19.102 ENTRY UPON VACANT PRIVATE PROPERTY

Officers and employees of the City upon whom duties are imposed by this chapter may enter upon vacant private property for the purpose of performing such duties.

### SECTION 19.103 INTERFERENCE PROHIBITED

No person shall impede or interfere with officers and employees of the City in the performance of any duties imposed by this chapter.

### SECTION 19.104 NOTICE OF ILLEGAL SIGNS

Whenever it is determined by the Department of Building and Safety that an illegal sign exists on vacant private property in the City, said department shall give written notice by registered or certified mail to the owner of such property. Said notice shall include the following:

- (a) A statement of the determination that an illegal sign exists;
- (b) A statement requiring the owner, within 10 days, to remove the sign or, in the alternative, appeal the determination to the Board of Building and Safety Commissioners;
- (c) A statement that if the owner fails to remove the sign, or appeal to the Board of Building and Safety Commissioners as herein above provided, said sign will be removed by City forces;

- (d) A statement that if the sign is removed by City forces, the cost thereof will be assessed against the real property upon which the sign is located.

### SECTION 19.105 REMOVAL OF ILLEGAL SIGN

If within 10 days after notice has been given as provided in Section 19.104 the owner has not filed an appeal with the Board of Building and Safety Commissioners as herein above provided, the Department of Building and Safety shall inspect the property. If it is determined that the illegal sign has not been removed, said department shall notify the Department of Public Works which shall immediately enter upon the vacant private property in question and remove the illegal sign.

### SECTION 19.106 COLLECTION OF COSTS

Whenever an illegal sign is removed by the Department of Public Works, the costs incurred shall be a personal obligation against the owner of the property upon which the nuisance is located, recoverable by the City in an action before any court of competent jurisdiction. These costs shall include an amount equal to 40 percent of the cost to perform the actual work, but not less than the sum of \$100.00, to cover the City's costs for administering any contract and supervising the work required, unless the work is necessitated by an event or course of events that prompts the declaration of a local emergency by the Mayor. In addition to this personal obligation and all other remedies provided by law, the City may collect any judgment, fee, cost, or charge, including any permit fees, fines, late charges, or interest, incurred in relation to the provisions of this section as provided in *Los Angeles Administrative Code*, Sections 7.35.1 through 7.35.8.





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