

BUILDING STANDARDS COMMISSION

2525 Natomas Park Drive, Suite 130
Sacramento, California 95833-2936
(916) 263-0916 FAX (916) 263-0959



January 23, 2014

Alice D. Atkins, CMC, City Clerk
City of Monrovia
415 South Ivy Avenue
Monrovia, CA 91016

RE: Ordinance #2013-005

Dear Ms. Atkins:

This letter is to advise you of our determination regarding the referenced ordinance with express findings received from your agency on December 12, 2013.

Our review finds the submittal to contain one ordinance modifying provisions of the 2013 California Building Standards Code in Title 24, California Code of Regulations (code), and express findings complying with Health and Safety Code §§17958.7 and 18941.5. The code modification is accepted for filing and is enforceable. This letter attests only to the satisfaction of the cited law for filing of local code amendment supported by an express finding with the Commission. The Commission is not authorized by law to evaluate the merit of the code modification or the express finding.

Local modifications to the code are specific to a particular edition of the code. They must be readopted and filed with the Commission in order to remain in effect when the next triennial edition of the code is published.

On a related matter, should your city receive and ratify Fire Protection District ordinances making modifications to the code, be advised that Health and Safety Code §13869.7(c) requires such ratified ordinances and express findings to be filed with the Department of Housing and Community Development, Division of Codes and Standards, State Housing Law Program, rather than this Commission. Also, ordinances making modifications to the energy efficiency standards of the code may require approval from the California Energy Commission pursuant to Public Resources Code §25402.1(h)(2).

If you have any questions or need any further information, you may contact me at (916) 263-0916.

Sincerely,

A handwritten signature in blue ink that reads "Enrique M. Rodriguez".

Enrique M. Rodriguez
Associate Construction Analyst

cc: Chron
Local Filings



RECEIVED
2013 DEC 12 P 2:38
CITY OF MONROVIA
CITY CLERK'S OFFICE

December 9, 2013

Building Standards Commission
State of California – State Consumer Services Agency
2525 Natomas Park Drive, Suite 130
Sacramento, California 95833

Re: Adoption of California Building Standards for City of Monrovia, California
City Ordinance Number 2010-16.

To Whom It May Concern:

Enclosed is a certified copy of Ordinance Number 2013-05 adopted by the Monrovia City Council at their regular City Council Meeting of December 3, 2013. This includes the amendments, rationale, and findings.

Please verify receipt of this correspondence in writing to:

Alice D. Atkins, CMC, City Clerk
City of Monrovia
415 South Ivy Avenue
Monrovia, California 91016

Should you have any questions, please feel free to contact Ms. Atkins at (626) 932-5505 or e-mail to aatkins@ci.monrovia.ca.us.

Sincerely,

Kris Ryan
Administrative Clerk
Office of the City Clerk
City of Monrovia

ORDINANCE NO. 2013-05

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF MONROVIA, CALIFORNIA, AMENDING TITLE 15 OF THE MONROVIA MUNICIPAL CODE, ADOPTING BY REFERENCE THE 2013 EDITION OF THE CALIFORNIA BUILDING STANDARDS CODE, KNOWN AS THE CALIFORNIA CODE OF REGULATIONS (PART 2 OF TITLE 24), EXCEPT CHAPTER 27 (ELECTRICAL), CHAPTER 28 (MECHANICAL), CHAPTER 29 (PLUMBING), AND APPENDICES A-H AND J-M; THE 2013 CALIFORNIA HISTORICAL BUILDING CODE (PART 8 OF TITLE 24); THE 2013 CALIFORNIA EXISTING BUILDING CODE (PART 10 OF TITLE 21), BASED ON THE 2012 INTERNATIONAL BUILDING CODE VOLUMES I AND II; THE 2013 CALIFORNIA RESIDENTIAL CODE (PART 2.5 OF TITLE 24), EXCEPT APPENDICES A-Q, BASED ON THE 2012 INTERNATIONAL RESIDENTIAL CODE; THE 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE, CHAPTER 4 AND CHAPTER 5 MANDATORY MEASURES ONLY (CALGREEN) (PART 11 OF TITLE 24); THE 2013 CALIFORNIA PLUMBING CODE (PART 5 OF TITLE 24), BASED ON THE 2012 UNIFORM PLUMBING CODE; THE 2013 CALIFORNIA MECHANICAL CODE (PART 4 OF TITLE 24), BASED ON THE 2012 UNIFORM MECHANICAL CODE; THE 2013 CALIFORNIA ENERGY CODE (PART 6 OF TITLE 24); THE 2013 CALIFORNIA ELECTRICAL CODE (PART 3 OF TITLE 24), BASED ON THE 2011 NATIONAL ELECTRICAL CODE; THE 2013 CALIFORNIA FIRE CODE (PART 9 OF TITLE 24), BASED ON THE 2012 INTERNATIONAL FIRE CODE; AND READOPTING THE 1997 EDITION OF THE UNIFORM HOUSING CODE, THE 1997 EDITION OF THE ADMINISTRATIVE CODE, THE 2000 EDITION OF THE SOLAR ENERGY CODE, THE 1997 EDITION OF THE BUILDING SECURITY CODE, ADOPTING CERTAIN AMENDMENTS, ADDITIONS, AND DELETIONS TO THE FOREGOING UNIFORM CODES, RE-ADOPTING PENALTIES FOR VIOLATIONS THEREOF, AND MAKING FINDINGS ACCORDING TO LAW

THE CITY COUNCIL OF THE CITY OF MONROVIA DOES ORDAIN AS FOLLOWS

SECTION 1. Chapter 15.04 ("Codes Adopted") of the Monrovia Municipal Code is hereby amended as follows. Existing Monrovia Municipal Code Sections un-changed by this Ordinance shall remain in effect, with the exception of existing references to previous editions of the codes referenced, which are hereby repealed and replaced with the editions adopted by reference in this Ordinance:

*Chapter 15.04

CODES ADOPTED

§ 15.04.010 Adoption.

The following codes are hereby adopted by reference, with the exception of the additions, deletions and amendments set forth in this chapter. With the Existing references to prior editions of the codes are hereby repealed:

(A) Building Code.

(1) Adoption. Except as hereinafter provided, and except Chapter 27 (electrical), Chapter 28 (mechanical), Chapter 29 (plumbing), and appendices A-H and J-M, the California Building Code, 2013 Edition (Cal. Code of Regulations Title 24, Part 2), is hereby adopted by reference as the Building Code of the City of Monrovia. A copy of the Building Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public

inspection while the code is in force.

~~(2) Penalty. Any person, firm or corporation violating any of the provisions of the Building Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the Building Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code.~~

(B) Mechanical Code.

(1) Adoption. Except as hereinafter provided, the California Mechanical Code, 2013 Edition (Cal. Code of Regulations Title 24, Part 4), is hereby adopted by reference as the Mechanical Code of the City of Monrovia. A copy of the Mechanical Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force.

~~(2) Penalty. Any person, firm or corporation violating any of the provisions of the Mechanical Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the Mechanical Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code.~~

(C) Plumbing Code.

(1) Adoption. Except as hereinafter provided, the California Plumbing Code, 2013 Edition (Cal. Code of Regulations, Title 24, Part 5), is hereby adopted by reference as the Plumbing Code of the city of Monrovia. A copy of the Plumbing Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force.

~~(2) Penalty. Any person, firm or corporation violating any of the provisions of the Plumbing Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the Plumbing Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code.~~

(D) Electrical Code.

(1) Adoption. Except as hereinafter provided, the 2013 California Electrical Code (Part 3, Title 24, Cal. Code of Regulations) is hereby adopted by reference and incorporated herein as though set forth in full as the Electrical Code of the City of Monrovia. A copy of the Electrical Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force.

~~(2) Penalty. Any person, firm or corporation violating any of the provisions of the Electrical Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the Electrical Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code.~~

(E) Building Conservation Code. — California Existing Building Code

(1) Adoption. Except as hereinafter provided, the California Building Conservation Existing Building Code, 2013 Edition (Cal. Code of Regulations Title 24, Part 10), is hereby adopted by reference as the California Existing Building Code of the City of Monrovia. A copy of the California Existing Building Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force.

~~(2) Penalty. Any person, firm or corporation violating any of the provisions of the Building Conservation Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the Building Conservation Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code.~~

(F) Administrative Code.

(1) Adoption. Except as hereinafter provided, the Uniform Administrative Code, 1997 Edition, is hereby adopted by reference as the Administrative Code of the City of Monrovia. A copy of the Administrative Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force.

~~(2) Penalty. Any person, firm or corporation violating any of the provisions of the Administrative Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the Administrative Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code.~~

(G) Housing Code.

(1) Adoption. Except as hereinafter provided, the Uniform Housing Code, 1997 Edition is hereby adopted by reference as the Housing Code of the City of Monrovia. A copy of the Housing Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force.

~~(2) Penalty. Any person, firm or corporation violating any of the provisions of the Housing Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the Housing Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code.~~

(H) Building Security Code.

(1) Adoption. Except as hereinafter provided, the Uniform Building Security Code, 1997 Edition, is hereby adopted by reference as the Building Security Code of the City of Monrovia. A copy of the Building Security Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force.

~~(2) Penalty. Any person, firm or corporation violating any of the provisions of the Building Security Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the Building Security Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code.~~

(I) Solar Energy Code.

(1) Adoption. Except as hereinafter provided, Uniform Solar Energy Code, 2000 Edition, is hereby adopted by reference as the Solar Energy Code of the City of Monrovia. A copy of the Solar Energy Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force.

~~(2) — Penalty. Any person, firm or corporation violating any of the provisions of the Solar Energy Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the Solar Energy Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code.~~

(J) California Residential Code.

(1) Adoption. Except as hereinafter provided, and except appendices A-Q, the California Residential Code, 2010 Edition (Cal. Code of Regulations Title 24, Part 2.5), is hereby adopted by reference as the California Residential Code of the City of Monrovia. A copy of the California Residential Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force.

~~(2) — Penalty. Any person, firm or corporation violating any of the provisions of the California Residential Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the California Residential Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code.~~

(K) California Green Building Standards Code.

(1) Adoption. Except as hereinafter provided, the California Green Building Standards Code, 2010 Edition (Cal. Code of Regulations Title 24, Part 2.5), is hereby adopted by reference as the California Green Building Standards Code of the City of Monrovia. A copy of the California Green Building Standards Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force.

~~(2) — Penalty. Any person, firm or corporation violating any of the provisions of the California Green Building Standards Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the California Green Building Standards Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code."~~

(L) California Historical Building Code

(1) Adoption. Except as hereinafter provided, the California Historical Building Code, 2013 Edition (Cal. Code of Regulations Title 24, Part 8), is hereby adopted by reference as the California Historical Building Code of the City of Monrovia. A copy of the California Historical Building Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force.

~~(2) — Penalty. Any person, firm or corporation violating any of the provisions of the~~

~~California Historical Building Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the California Historical Building Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code."~~

(M) California Energy Code

(1) Adoption. Except as hereinafter provided, the California Energy Code 2013 Edition (California Code of Regulations Title 24, Part 6) is hereby adopted by reference as the California Energy Code of the City of Monrovia. A copy of the California Energy Code of the City shall be maintained in the office of the City Clerk, and shall be made available for public inspection while the code is in force."

~~(2) Penalty. Any person, firm or corporation violating any of the provisions of the California Energy Code shall be deemed guilty of a misdemeanor, and each such person shall be deemed guilty of a separate offense for each and every day or portion thereof during which any violation of any of the provisions of the California Energy Code is committed, continued or permitted, and shall be punishable as provided in § 1.16.010 of this code.~~

"§ 15.04.020 SUBSTITUTION OF TERMS.

The following word and phrase substitutions are made in all codes adopted in § 15.04.010 wherever they appear:

For the word or phrase:	Substitute:
City of _____	City of Monrovia
governing body	City Council
jurisdiction	City of Monrovia
Board of Appeals	Planning Commission"

"§ 15.04.025 PENALTIES.

(A) Any violation of any provision of this Chapter or any Code adopted herein by reference shall constitute a misdemeanor and shall be punishable by a fine not to exceed one thousand dollars (\$1,000) or by imprisonment for a period not to exceed six (6) months, or by both such fine and imprisonment, unless prosecuted as an infraction by the City Prosecutor. Each and every day such a violation exists shall constitute a separate and distinct violation of this Ordinance.

(B) The violation of any of the provisions of this Ordinance or any Code adopted herein by reference shall constitute a public nuisance and may be abated by the City through civil process by means of restraining order, preliminary or permanent injunction or in any other manner provided by this Code or other applicable law for the abatement of such nuisances.

(C) If designated in this Code, a violation of this Chapter may be prosecuted and subject to fine by way of administrative citation.

BUILDING CODE AMENDMENTS

"§ 15.04.225 SECTION 701A.1 AMENDED-SCOPE.

Section 701A.1 is amended to read as follows:

701A.1 Scope. This chapter applies to building materials, systems and/or assemblies used in the exterior design and construction of new buildings and additions to existing buildings located within the Wildland-Urban Interface Fire Area."

Section 701A.3 is amended to read as follows:

701A.3 Application. New buildings located in the Wildland-Urban Interface Area shall comply with the provisions of this chapter.

EXCEPTION:

1. Buildings of an accessory character classified as a Group U occupancy of any size located at least 50 feet from a Group R-3 structure.

Additions to existing buildings and/or construction of the existing structure located in the Wildland-Urban Interface Area shall comply with the provisions of this chapter.

EXCEPTION:

1. Additions made during the previous 60 months to the existing structure less than 10 percent of the original area.

The construction requirements of the existing structure located in the Wildland-Urban Interface Area is based on the following:

1. **Over 10% but less than 50% addition.** The construction of the existing structure or building being added to may be left in place providing the cumulative area of additions made during the previous 60 months to the existing structure is over 10 percent but less than 50 percent of the original area.

2. **50% or more addition.** The construction of the existing structure or building being added to shall be made to comply with the provisions of this chapter when the cumulative area of additions made during the previous 60 months to the existing structure is 50 percent or more of the original area."

"§ 15.04.240 CHAPTER 9 AMENDED - FIRE EXTINGUISHING SYSTEMS. SECTION 903.2 AMENDED - AUTOMATIC SPRINKLER SYSTEMS.

Section 903.2 of the Building Code is hereby amended to read as follows:

1. In all new buildings regardless of the type of construction or occupancy.

EXCEPTIONS:

- A) Detached Group U occupancies, providing the floor area does not exceed 1000 square feet.
- B) Other minor buildings and/or occupancies as approved by the Fire Chief.

2. In existing buildings with new occupancies as required by other sections of the Fire Code."

"§ 15.04.245 SECTION 903.2.18 AMENDED—GROUP U PRIVATE GARAGES AND CARPORTS ACCESSORY TO GROUP R-3 OCCUPANCIES.

Section 903.2.18 of the Building Code is hereby amended to read as follows:
Carports with habitable space above, detached private garages over 1000 square feet in area, and attached private garages shall be protected by fire sprinklers in accordance with this section. These areas shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used."

"§ 15.04.250 RESERVED. SECTION 903.3.1.2 AMENDED - NFPA 13R SPRINKLER SYSTEM.

Section 903.3.1.2 of the Building Code is hereby amended to read as follows:
Where allowed in buildings of Group R, up to and including buildings four stories in height, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13R with the following additions:
(a) Attics shall be fully sprinklered with quick-response intermediate temperature heads.
(b) Private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area."

"§ 15.04.255 SECTION 903.3.1.3 AMENDED - NFPA 13D SPRINKLER SYSTEM.

Section 903.3.1.3 of the Building Code is hereby amended to read as follows:
Where allowed in buildings of Group R, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13D with the following additions:
(a) Attics containing forced air units shall have one or more quick-response intermediate temperature sprinkler heads adjacent to each unit.
(b) Private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area.
(c) Attics and basements used for storage purposes shall be fully sprinklered with residential type heads.
(d) A single exterior bell activated by the waterflow switch shall be provided at an approved location."

"§ 15.04.260 RESERVED. Section 1507.1 of the Building Code is amended to read as follows:

(A) The first paragraph of Section 1507.1 is revised by adding a new second sentence to read as follows:

No wood roof covering or roof covering material containing wood or wood products, whether treated or untreated, may be installed.

EXCEPTION: Additions to Group R, Division 3 Occupancies which have existing wood roof coverings may be covered with matching materials, provided the new material qualifies as a Class A or B roof covering.

~~(B) Solar panels of photovoltaic systems installed on roofs of structures located in the Wildland-Urban Interface Area shall be rated Class A.~~

EXCEPTIONS:

1. ~~Photovoltaic systems covering less than 10% of the entire roof area of the structure.~~
2. ~~Photovoltaic systems installed on structures of an accessory character classified as a Group U occupancy located at least 50 feet from a Group R-3 structure.~~
- ~~(C) (B) Subsection 1505.5 is deleted entirely.~~
- ~~(D) (C) Table 15 amended by referencing a new Footnote 1 at the table title with said footnote to read as follows:~~

1. No wood roof covering or roof covering material containing wood or wood products, whether treated or untreated, may be installed. See Section 1507.1 for exception.

1507.3.1 Deck requirements. Concrete and clay tile shall be installed only over solid sheathing or spaced structural sheathing boards.

TABLE 1507.3.7
CLAY AND CONCRETE TILE ATTACHMENT ^{a, b, c}

GENERAL - CLAY OR CONCRETE ROOF TILE				
<i>Maximum basic wind speed (mph)</i>	<i>Mean roof height (feet)</i>	<i>Roof slope up to <3:12</i>		<i>Roof slope 3:12 and over</i>
85	0 - 60	Minimum slope: 2.5:12 Two fasteners per tile.		Two fasteners per tile.
100	0 - 40			
100	> 40 - 60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails. The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.		
110	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.		
120	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.		
130	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.		
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.2.		
INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS ^{d, e} (Installations on solid sheathing with battens)				
<i>Maximum basic wind</i>	<i>Mean roof height</i>	<i>Roof slope up to <5:12</i>	<i>Roof slope 5:12<12:12</i>	<i>Roof slope 12:12 and over</i>

speed (mph)	(feet)			
85	0 - 60	Minimum slope is 4:12	One fastener per tile. Tiles with installed weight less than 9 lbs./sq. ft. require a minimum of one fastener per tile	One fastener required for every tile. Tiles with installed weight less than 9 lbs./sq. ft. require a minimum of one fastener per tile.
100	> 40 - 60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails The nose of all ridge, hip and rake tiles shall be set in a bead of roofers mastic.		
110	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.		

INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS
(Installations on solid sheathing without battens)

Maximum basic wind speed (mph)	Mean roof height (feet)	Minimum All roof slopes 4 units vertical in 12 units horizontal Maximum slope 7 units vertical in 12 units horizontal
120	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.
130	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.2
85	0 - 60	One fastener per tile.
100	0 - 40	One fastener per tile.
100	>40 - 60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.
110	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.
120	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.
130	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.2.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 4.882 kg/m².

a. Minimum fastener size. Hot dipped galvanized ring shank or other corrosion-resistant nails not less than No. 11 gage with 5/16-inch head. Fasteners shall be long enough to penetrate into the sheathing 0.75 inch or through the thickness of the sheathing, whichever is less. Attaching wire for clay and concrete tile shall not be smaller than 0.083 inch and shall be copper, brass or stainless steel.

b. Snow areas. A minimum of two fasteners per tile are required or battens and one fastener.

- c. Roof slopes greater than 24:12. The nose of all tiles shall be securely fastened.
- d. Horizontal battens. Battens shall be not less than 1 inch by 2 inch nominal. Provisions shall be made for drainage by a minimum of 1/8-inch riser at each nail or by 4-foot-long battens with at least a 0.5-inch separation between battens. Horizontal battens are required for slopes over 7:12.
- e. Perimeter fastening areas include three tile courses but not less than 36 inches from either side of hips or ridges and edges of eaves and gable rakes.

“§ 15.04.270 CHAPTER 16 AMENDED STRUCTURAL DESIGN.

2013 16-01. Section 1613.6 is added to Chapter 16 of the 2013 Edition of the California Building Code to read as follows:

1613.6 ASCE 7, 12.12.3 Modify ASCE 7 Equation 12.12-1 of Section 12.12.3 to read as follows:

$$\delta_M = \frac{C_d \delta_{max}}{I_e} \quad (12.12-1)$$

2013 16-02. Section 1613.7 is added to Chapter 16 of the 2013 Edition of the California Building Code to read as follows:

1613.7 ASCE 7, 12.2.3.1, Exception 3. Modify ASCE 7 Section 12.2.3.1 Exception 3 to read as follows:

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

2013 16-03. Section 1613.8 is added to Chapter 16 of the 2013 Edition of the California Building Code to read as follows:

1613.8 ASCE 7, Section 12.11.2.2.3. Modify ASCE 7, Section 12.11.2.2.3 to read as follows:

12.11.2.2.3 Wood Diaphragms. In wood diaphragms, the continuous ties shall be in addition to the diaphragm sheathing. Anchorage shall not be accomplished by use of toe nails or nails subject to withdrawal nor shall wood ledgers or framing be used in cross-grain bending or cross-grain tension. 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. Added chords of diaphragms may be used to form sub diaphragms to transmit the anchorage forces to the main continuous crossties.
- 2. The maximum diaphragm shear used to determine the depth of the sub diaphragm shall not exceed 75% of the maximum diaphragm shear.

2013 16-04. Section 1613.9 is added to Chapter 16 of the 2013 Edition of the California Building Code to read as follows:

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 constructing such buildings on or into slopes steeper than one unit vertical in three units horizontal (33.3%). 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 division.

Exception: Non-habitable accessory buildings and decks not supporting or supported from the main building are exempt from these regulations.

1613.9.3 Definitions. For the purposes of this section certain terms are defined as follows:

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

DIAPHRAGM ANCHORS are assemblies that connect a diaphragm to the adjacent foundation at the uphill diaphragm edge.

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

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

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

HILLSIDE BUILDING is any building or portion thereof constructed on or into a slope steeper than one unit vertical in three units horizontal (33.3%). 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 a direct connection as described in Sections 1613.9.5 and 1613.9.7.3 between the diaphragm and the uphill foundation.

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

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

UPHILL FOUNDATION is 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 section shall be analyzed, designed, and constructed in accordance with the provisions of this division. 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 Section 2205.2.2 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% 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 four 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 1613.9.7.3, 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% 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 four 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 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 (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 three-inch (76 mm) nominal width. The effects of eccentricity on wood members shall be evaluated as required per Item 9.
4. Design. Primary and secondary anchorage, including diaphragm struts, splices, and collectors shall be designed for 125% of the tributary force.
5. Allowable Stress Increase. The ~~one-third~~ allowable stress increase permitted under 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 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.

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 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 AF&PA SDPWS Section 4.3.2. 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. The minimum horizontal length of a step shall be eight feet (2438 mm) and the maximum vertical height of a step shall be two feet, eight 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, and
3. Tension-only braced frames.

Braced frames designed in accordance with the requirements of Section 2205.2.2 of this Code 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 five 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 5/8 inch (15.9 mm) diameter machine bolts.

2013 16-05. Section 1613.10 is added to Chapter 16 of the 2013 Edition of the California Building Code to read as follows:

1613.10 Suspended Ceilings. Minimum design and installation standards for suspended ceilings shall be determined in accordance with the requirements of Section 2506.2.1 of this Code and this section.

1613.10.1 Scope. This part contains special requirements for suspended ceilings and lighting systems. Provisions of Section 13.5.6 of ASCE 7-10 shall apply except as modified herein.

1613.10.2 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.

1613.10.3 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 adaptors through the ceiling tile. Sprinkler heads and other penetrations shall have a 2 in. (50mm) oversize ring, sleeve, or adapter through the ceiling tile to allow for free movement of at least 1 in. (25mm) 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.

Sprinkler heads penetrating fire-resistance-rated floor/ceiling or roof/ceiling assemblies shall comply with Section 714 of this Code.

1613.10.4 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.

1613.10.4.1 General. Ceiling suspension systems shall be connected and braced with

vertical hangers attached directly to the structural deck 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.

1613.10.4.2 Assembly Device. All lay-in panels shall be secured to the suspension ceiling assembly with two hold-down clips minimum for each tile within a 4-foot (1219 mm) radius of the exit lights and exit signs.

1613.10.4.3 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 Section 1006.3 of this Code.

1613.10.4.4 Supports for Appendage. Separate support from the structural deck shall be provided for all appendages such as light fixtures, air diffusers, exit signs, and similar elements."

“§ 15.04.280 CHAPTER 17 AMENDED - STRUCTURAL TESTS AND SPECIAL INSPECTIONS

2013 17-01. Section 1704.5 of the 2013 Edition of the California Building Code is amended to read as follows:

1704.5 Structural Observations. Where required by the provisions of Section 1704.5.1 or 1704.5.2, the owner shall employ a registered design professional structural observer to perform structural observations as defined in Section 1702. The structural observer shall be one of the following individuals:

1. The registered design professional responsible for the structural design, or
2. A registered design professional designated by the registered design professional responsible for the structural design.

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

~~At the conclusion of the work included in the permit, the structural observer shall submit to the building official a written statement that the site visits have been made and identify any reported deficiencies that, to the best of the structural observer's knowledge, have not been resolved.~~

The owner or owner's representative shall coordinate and call a preconstruction meeting between the structural observer, contractors, affected subcontractors and special 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 resisting systems of the structure and to review scheduling of the required observations. A record of the meeting shall be included in the report submitted to the building official.

Observed deficiencies shall be reported in writing to the owner or owner's representative, special inspector, contractor and the building official. Upon the form prescribed by the building

official, the structural observer shall submit to the building official a written statement at each significant construction stage stating that the site visits have been made and identifying 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 building official.

2013 17-02. Section 1704.5.1 of the 2013 Edition of the California Building Code is amended to read as follows:

1704.5.1 Structural observations for seismic resistance. Structural observations shall be provided for those structures assigned to Seismic Design Category D, E or F, where one or more of the following conditions exist:

1. The structure is classified as Risk Category III or IV in accordance with Table 1604.5.
2. The height of the structure is greater than 75 feet (22860 mm) above the base.
3. ~~The structure is assigned to Seismic Design Category E, is~~ classified as Risk Category I or II in accordance with Table 1604.5, ~~and is greater than two stories one story above grade plane a lateral design is required for the structure or portion thereof.~~

Exception: One-story wood framed Group R-3 and Group 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% sloped), assigned to Seismic Design Category D.

4. When so designated by the registered design professional responsible for the structural design.
5. When such observation is specifically required by the building official.

2013 17-03. Section 1705.3 of the 2013 Edition of the California Building Code is amended to read as follows:

1705.3 Concrete Construction. The special inspections and verifications for concrete construction shall be as required by this section and Table 1705.3.

Exceptions: Special inspection 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) regardless of the compressive strength specified in the construction documents or used in the footing construction.
2. Continuous concrete footings supporting walls of buildings three stories or less in height 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 1805.4.2; or
 - 2.3. The structural design of the footing is based on a specified compressive strength,

f'_c , no greater than 2,500 pounds per square inch (psi) (17.2 Mpa), regardless of the compressive strength specified in the construction documents or used in the footing construction.

3. Nonstructural concrete slabs supported directly on the ground, including pre-stressed slabs on grade, where the effective pre-stress 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.

2013 17-04. Table 1705.3 of the 2013 Edition of the California Building Code is amended to read as follows:

**TABLE 1705.3
REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION**

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCE STANDARD ^a	IBC REFERENCE
3. Inspection of anchors cast in concrete where allowable loads have been increased or where strength design is used.	-	X	ACI 318: <u>D.9.2</u> <u>8.1.3, 21.1.8</u>	1908.5, 1909.4
4. Inspection of anchors post-installed in hardened concrete members ^b	-	X	ACI 318: 3.8.6, 8.1.3, 21.1.8	1909.4
a. <u>Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.</u>	X		<u>ACI</u> <u>318:D.9.2.4</u>	-
b. <u>Mechanical anchors and adhesive anchors not defined in 4.a.</u>		X	<u>ACI 318: D.9.2</u>	-

b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with ACI 355.2, D.9.2 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.

(Portions of table not shown remain unchanged.)

2013 17-05. Exception 3 of Section 1705.11 of the 2013 Edition of the California Building Code is amended to read as follows:

1705.11 Special inspections for seismic resistance. Special inspections itemized in Sections 1705.11.1 through 1705.11.8, unless exempted by the exceptions of Section 1704.2, are required for the following:

1. The seismic force-resisting systems in structures assigned to Seismic Design Category C, D, E or F in accordance with Sections 1705.11.1 through 1705.11.3, as applicable.
2. Designated seismic systems in structures assigned to Seismic Design Category C, D, E or F in accordance with Section 1705.11.4.
3. Architectural, mechanical and electrical components in accordance with Sections 1705.11.5 and 1705.11.6.
4. Storage racks in structures assigned to Seismic Design Category D, E or F in accordance with Section 1705.11.7.
5. Seismic isolation systems in accordance with Section 1705.11.8.

Exception: Special inspections itemized in Sections 1705.11.1 through 1705.11.8 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 1613.3.4, 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 1613.3.4, 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, is not assigned to Seismic Design Category D, E or F 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.

2013 17-06. Section 1711.1.1, Section 1711.1.2 and Chapter 35 of the 2013 Edition of the California Building Code are amended to read as follows:

1711.1.1 General. The vertical load-bearing capacity, torsional moment capacity and deflection characteristics of joist hangers shall be determined in accordance with ASTM D 1761 and ASTM D 7147 as specified below using lumber having a specific gravity of 0.49 or greater, but not greater than 0.55, as determined in accordance with AF&PA NDS for the joist and headers.

Exception: The joist length shall not be required to exceed 24 inches (610 mm).

1711.1.2 Vertical load capacity for joist hangers. The vertical load-bearing capacity for the

joist hanger shall be determined by testing a minimum of three joist hanger assemblies as specified in ASTM D 1761 or ASTM D 7147. If the ultimate vertical load for any one of the tests varies more than 20 percent from the average ultimate vertical load, at least three additional tests shall be conducted. The allowable vertical load-bearing of the joist hanger shall be the lowest value determined from the following:

1. The lowest ultimate vertical load for a single hanger from any test divided by three (where three tests are conducted and each ultimate vertical load does not vary more than 20 percent from the average ultimate vertical load).
2. The average ultimate vertical load for a single hanger from all tests divided by three (where six or more tests are conducted).
3. The average from all tests of the vertical loads that produce a vertical movement of the joist with respect to the header of 1/8 inch (3.2 mm).
4. The sum of the allowable design loads for nails or other fasteners utilized to secure the joist hanger to the wood members and allowable bearing loads that contribute to the capacity of the hanger.
5. The allowable design load for the wood members forming the connection.

Amend the Reference Standards in Chapter 35 for ASTM as follows:

<u>D 1761-06</u> <u>D 1761-88(2000)</u> <u>1</u>	Test Method for Mechanical Fasteners in Wood	1711.1.1 1711.1.2 1711.1.3
<u>D 7147-05</u>	<u>Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers</u>	<u>1711.1.1</u> <u>1711.1.2</u>

“§ 15.04.290 CHAPTER 18 AMENDED - SOILS AND FOUNDATIONS

2013 18-01. Section 1807.1.4 of the 2013 Edition of the California Building Code is amended to read as follows:

1807.1.4 Permanent wood foundation systems. Permanent wood foundation systems shall be designed and installed in accordance with AF&PA PWF. Lumber and plywood shall be treated in accordance with AWPA U1 (Commodity Specification A, Use Category 4B and Section 5.2) and shall be identified in accordance with Section 2303.1.8.1. Permanent wood foundation systems shall not be used for structures assigned to Seismic Design Category D, E or F.

2013 18-02. Section 1807.1.6 of the 2013 Edition of the California Building Code is amended to read as follows:

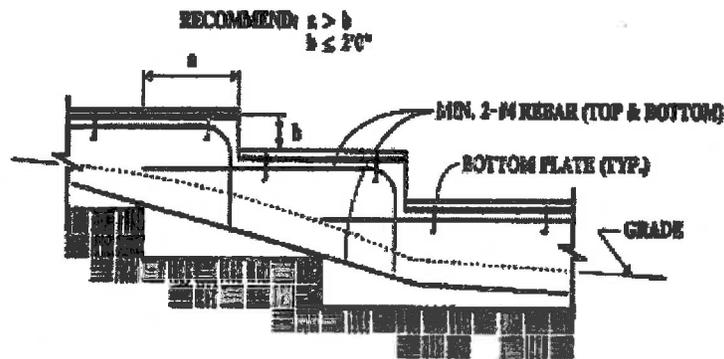
1807.1.6 Prescriptive design of concrete and masonry foundation walls. Concrete and masonry foundation walls that are laterally supported at the top and bottom shall be permitted to be designed and constructed in accordance with this section. Prescriptive design of foundation walls shall not be used for structures assigned to Seismic Design Category D, E or F.

2013 18-03. Section 1809.3 of the 2013 Edition of the California Building Code is amended to

read as follows:

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 No. 4 rebar. Two bars shall be placed at the top and bottom of the footings as shown in Figure 1809.3.



STEPPED FOUNDATIONS

FIGURE 1809.3
STEPPED FOOTING

2013 18-04. Section 1809.7 and Table 1809.7 of the 2013 Edition of the California Building Code are amended to read as follows:

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 ^{a, b, c, d, e}

NUMBER OF FLOORS SUPPORTED BY THE FOOTING ^f	WIDTH OF FOOTING (inches)	THICKNESS OF FOOTING (inches)
1	12	6
2	15	6
3	18	8 ^g

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm

- a. Depth of footings shall be in accordance with Section 1809.4.
- b. The ground under the floor shall be permitted to be excavated to the elevation of the top of the footing.
- c. ~~Interior stud-bearing walls shall be permitted to be supported by isolated footings. The footing width and length shall be twice the width shown in this table, and footings shall be spaced not more than 6 feet on center. Not Adopted.~~
- d. See Section 1908 for additional requirements for concrete footings of structures assigned to Seismic Design Category C, D, E or F.
- e. For thickness of foundation walls, see Section 1807.1.6.
- f. Footings shall be permitted to support a roof 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.~~

2013 18-05. Section 1809.12 of the 2013 Edition of the California Building Code is amended to read as follows:

1809.12 Timber footings. Timber footings shall be permitted for buildings of Type V construction and as otherwise approved by the building official. Such footings shall be treated in accordance with AWWPA 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 footing 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.

2013 18-06. Section 1810.3.2.4 of the 2013 Edition of the California Building Code is amended to read as follows:

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 D 25. 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."

"§ Section 15.04.300 CHAPTER 19 AMENDED - CONCRETE

2013 19-01. Section 1905.1.3 of the 2013 Edition of the California Building Code is amended to read as follows:

1905.1.3 ACI 318, Section 21.4. Modify ACI 318, Section 21.4, by renumbering Section 21.4.3 to become 21.4.4 and adding new Sections 21.4.3, 21.4.5, 21.4.6 and 21.4.7 to read as follows:

21.4.3 – 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.

21.4.4 – Elements of the connection that are not designed to yield shall develop at least 1.5 S_y.

~~21.4.5 – Wall piers in Seismic Design Category D, E or F shall comply with Section 1905.1.4 of the International Building Code. In structures assigned to Seismic Design Category D, E~~

or F, intermediate precast wall panels and wall piers shall be designed in accordance with Section 21.9 or 21.13.

21.4.6 – Wall piers not designed as part of a moment frame in buildings assigned to Seismic Design Category C shall have transverse reinforcement designed to resist the shear forces determined from 21.3.3. Spacing of transverse reinforcement shall not exceed 8 inches (203 mm). Transverse reinforcement shall be extended beyond the pier clear height for at least 12 inches (305 mm).

Exceptions:

1. Wall piers that satisfy 21.13.
2. Wall piers along a wall line within a story where other shear wall segments provide lateral support to the wall piers and such segments have a total stiffness of at least six times the sum of the stiffnesses of all the wall piers.

21.4.7 – Wall segments with a horizontal length-to-thickness ratio less than 2.5 shall be designed as columns.

2013 19-02. Section 1905.1.8 of the 2013 Edition of the California Building Code is amended to read as follows:

1905.1.8 ACI 318, Section 22.10. Delete ACI 318, Section 22.10, and replace with the following:

22.10 – Plain concrete in structures assigned to Seismic Design Category C, D, E or F.

22.10.1 – Structures assigned to Seismic Design Category C, D, E or F shall not have elements of structural plain concrete, except as follows:

~~(a) Structural plain concrete basement, foundation or other walls below the base are permitted in detached one and two family dwellings three stories or less in height constructed with stud bearing walls. In dwellings assigned to Seismic Design Category D or E, the height of the wall shall not exceed 8 feet (2438 mm), the thickness shall not be less than 7½ inches (190 mm), and the wall shall retain no more than 4 feet (1219 mm) of unbalanced fill. Walls shall have reinforcement in accordance with 22.6.6.5. Concrete used for fill with a minimum cement content of two (2) sacks of Portland cement or cementitious material 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.

~~Exception: In detached one and two family dwellings three stories or less in height, the projection of the footing beyond the face of the supported member is permitted to exceed the footing thickness.~~

(c) Plain concrete footings supporting walls are permitted provided the footings have at least two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. ~~For footings that exceed 8 inches (203 mm) in thickness, a~~

minimum of one bar shall be provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.

Exceptions:

- ~~1. In Seismic Design Categories A, B and C, detached one- and two-family dwellings three stories or less in height and constructed with stud-bearing walls, are permitted to have plain concrete footings without longitudinal reinforcement with at least two continuous longitudinal reinforcing 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.~~
- ~~2. For foundation systems consisting of a plain concrete footing and a plain concrete stemwall, a minimum of one bar shall be provided at the top of the stemwall and at the bottom of the are footing.~~
- ~~3. Where a slab on ground is cast monolithically with the footing, one No. 5 bar is permitted to be located at either the top of the slab or bottom of the footing.~~

2013 19-03. Section 1905.1 is amended and Sections 1905.1.10 thru 1905.1.12 are added to Chapter 19 of the 2013 Edition of the California Building Code to read as follows:

1905.1 General. The text of ACI 318 shall be modified as indicated in Sections 1905.1.1 through ~~1908.1.10~~1905.1.12.

1905.1.10 ACI 318, Section 21.6.4. Modify ACI 318, Section 21.6.4, by adding Section 21.6.4.8 and 21.6.4.9 as follows:

21.6.4.8 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 Sections 21.6.4.1, Items (a) through (c), over the full height of the member.

21.6.4.9 – At any section where the design strength, ϕP_n , of the column is less than the sum of the shears V_e computed in accordance with ACI 318 Sections 21.5.4.1 and 21.6.5.1 for all the beams framing into the column above the level under consideration, transverse reinforcement as specified in ACI 318 Sections 21.6.4.1 through 21.6.4.3 shall be provided. For beams framing into opposite sides of the column, the moment components are permitted to be assumed to be of opposite sign. For the determination of the design strength, ϕP_n , of the column, these moments are permitted to be assumed to result from the deformation of the frame in any one principal axis.

1905.1.11 ACI 318, Section 21.9.4. Modify ACI 318, Section 21.9.4, by adding Section 21.9.4.6 as follows:

21.9.4.6 – Walls and portions of walls with $P_u > 0.35P_o$ shall not be considered to contribute to the calculated shear strength of the structure for resisting earthquake-induced forces. Such walls shall conform to the requirements of ACI 318 Section 21.13.

1905.1.12 ACI 318, Section 21.11.6. Modify ACI 318, by adding Section 21.11.6.1 as follows:

21.11.6.1 Collector and boundary elements in topping slabs placed over precast floor and roof elements shall not be less than 3 inches (76 mm) or $6 d_b$ in thickness, where d_b is the

diameter of the largest reinforcement in the topping slab. "

"§ 15.04.320 CHAPTER 23 AMENDED - WOOD

2013 23-01. Section 2304.9.1 of the 2013 Edition of the California Building Code is amended to read as follows:

2304.9.1 Fastener requirements. Connections for wood members shall be designed in accordance with the appropriate methodology in Section 2301.2. The number and size of fasteners connecting wood members shall not be less than that set forth in Table 2304.9.1. Staple fasteners in Table 2304.9.1 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 building official.

2013 23-02. Section 2304.11.7 of the 2013 Edition of the California Building Code is amended to read as follows:

2304.11.7 Wood used in retaining walls and cribs. Wood installed in retaining or crib walls shall be preservative treated in accordance with AWPA U1 (Commodity Specifications A or F) for soil and fresh water use. Wood shall not be used in retaining or crib walls for structures assigned to Seismic Design Category D, E or F.

2013 23-03. Section 2305.4 is added to Chapter 23 of the 2013 Edition of the California Building Code to read as follows:

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.

2013 23-04. Section 2305.5 is added to Chapter 23 of the 2013 Edition of the California Building Code to read as follows:

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 tightened to finger tight plus one half (1/2) wrench turn just prior to covering the wall framing.

2013 23-05. Section 2306.2 of the 2013 Edition of the California Building Code is amended to read as follows:

2306.2 Wood-frame diaphragms. Wood-frame diaphragms shall be designed and constructed in accordance with AF&PA SDPWS. Where panels are fastened to framing members with staples, requirements and limitations of AF&PA SDPWS 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 in Tables 2306.2(1) and 2306.2(2) are permitted to be increased 40 percent for wind design.

Exception: [DSA-SS, DSA-SS/CC and OSHPD 1, 2 &4] Wood structural panel diaphragms using staples as fasteners are not permitted by DSA and OSHPD.

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 diaphragms are 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.

2013 23-06. Section 2306.3 is amended and Section 2307.2 is added to the 2013 Edition of the California Building Code to read as follows:

2306.3 Wood-frame shear walls. Wood-frame shear walls shall be designed and constructed in accordance with AF&PA SDPWS. For structures assigned to Seismic Design Category D, E, or F, application of Tables 4.3A and 4.3B of AF&PA SDPWS shall include the following:

1. Wood structural panel thickness for shear walls shall not be less than 3/8 inch thick and studs shall not be spaced at more than 16 inches on center.
2. The maximum nominal unit shear capacities for 3/8 inch wood structural panels resisting seismic forces in structures assigned to Seismic Design Category D, E or F is 400 pounds per linear foot (plf).

Exception: Other nominal unit shear capacities may be permitted if such values are substantiated by cyclic testing and approved by the building official.

3. Where shear design values using allow 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 nominal member, or two 2-inch 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 Section 4.3.6.1 and 4.3.6.4.3 of AF&PA SDPWS for sill plate size and anchorage requirements.
4. Nails shall be placed not less than 1/2 inch in from the panel edges and not less than 3/8 inch 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 3/8 inch from panel edges and not less than 1/4 inch from the edge of the connecting members for shears of 350 plf or less using ASD or 500 plf or less using LRFD.
5. Table 4.3B 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 AF&PA 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 AF&PA SDPWS shall be met and the allowable shear values set forth in Table 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: 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 in 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 AF&PA SDPWS.

Exception: [DSA-SS 7DSA-SS/CC and OSHPD 1, 2 &4] Wood structural panel shear walls using staples as fasteners are not permitted by DSA and OSHPD.

2307.2 Wood-frame shear walls. Wood-frame shear walls shall be designed and constructed in accordance with Section 2306.3 as applicable.

2013 23-07. Section 2308.3.4 of Chapter 23 of the 2013 Edition of the California Building Code is amended to read as follows:

2308.3.4 Braced wall line support. Braced wall lines shall be supported by continuous foundations.

Exception: For structures with a maximum plan dimension not over 50 feet (15240 mm), continuous foundations are required at exterior walls only for structures assigned to Seismic Design Category A, B, or C.

2013 23-08. Section 2308.9.3.1, Section 2308.9.3.2 and Figure 2308.9.3.2 of the 2013 Edition of the California Building Code are amended to read as follow:

2308.9.3.1 Alternative bracing. Any bracing required by Section 2308.9.3 is permitted to be replaced by the following:

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 3/8-inch-minimum-thickness (9.5 mm) wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Table 2304.9.1 and blocked at wood structural panel edges. For structures assigned to Seismic Design Category D or E, each panel shall be sheathed on one face with 15/32-inch-minimum-thickness (11.9 mm) wood structural panel sheathing nailed with 8d common nails spaced 3 inches on panel edges, 3 inches at intermediate supports. Two anchor bolts installed in accordance with Section 2308.6 shall be provided in each panel. Anchor bolts shall be placed at each panel outside quarter points. Each panel end stud shall have a tie-down device fastened to the foundation, capable of providing an approved uplift capacity of not less than 1,800 pounds (8006 N). The tie-down device shall be installed in accordance with the manufacturer's recommendations. The panels

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.

2. In the first story of two-story buildings, each wall panel shall be braced in accordance with Section 2308.9.3.1, Item 1, except that 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 not be less than 3,000 pounds (13 344 N).

2308.9.3.2 Alternate bracing wall panel adjacent to a door or window opening. Any bracing required by Section 2308.9.3 is permitted to be replaced by the following when used adjacent to a door or window opening with a full-length header:

1. 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 3/8 inch (9.5 mm) minimum thickness wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Figure 2308.9.3.2. For structures assigned to Seismic Design Category D or E, each panel shall be sheathed on one face with 15/32-inch-minimum-thickness (11.9 mm) wood structural panel sheathing nailed with 8d common nails spaced 3 inches on panel edges, 3 inches at intermediate supports and in accordance with Figure 2308.9.3.2. The wood structural panel sheathing shall extend up over the solid sawn or glued-laminated header and shall be nailed in accordance with Figure 2308.9.3.2. A built-up header consisting of at least two 2 × 12s and fastened in accordance with Item 24 of Table 2304.9.1 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 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 (4,400 N) shall fasten the header to the inner studs opposite the sheathing. One anchor bolt not less than 5/8 inch (15.9 mm) diameter and installed in accordance with Section 2308.6 shall be provided in the center of each sill plate. The studs at each end of the panel shall have a tie-down device fastened to the foundation with an uplift capacity of not less than 4,200 pounds (18 480 N).

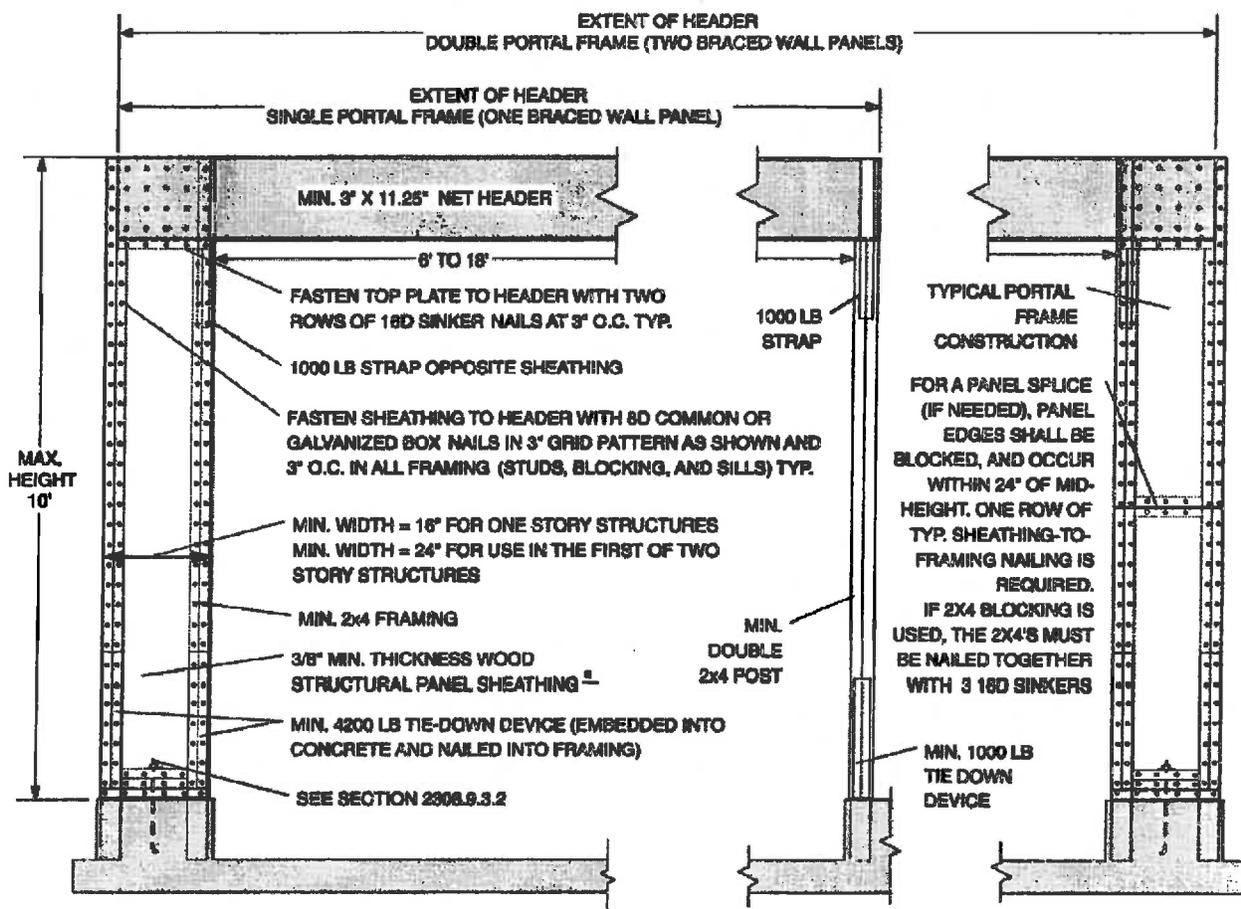
Where a panel is located on one side of the opening, the header shall extend between the inside face of the first full-length stud of the panel and the bearing studs at the other end of the opening. A strap with an uplift capacity of not less than 1,000 pounds (4400 N) shall fasten the header to the bearing studs. The bearing studs shall also have a tie-down device fastened to the foundation with an uplift capacity of not less than 1,000 pounds (4400 N).

The tie-down devices shall be an embedded strap type, installed in accordance with the manufacturer's recommendations. The 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.

2. In the first story of two-story buildings, each wall panel shall be braced in accordance



For SI: 1 foot = 304.8 mm; 1 inch = 25.4 mm; 1 pound = 4.448 N.

a. For structures assigned to Seismic Design Category D or E, sheathed on one face with 15/32-inch minimum thickness (11.9 mm) wood structural panel sheathing.

**FIGURE 2308.9.3.2
ALTERNATE BRACED WALL PANEL ADJACENT TO A DOOR OR WINDOW OPENING**

with Item 1 above, except that each panel shall have a length of not less than 24 inches (610 mm).

2013 23-09. Table 2308.12.4 of the 2013 Edition of the California Building Code is amended

to read as follows:

**TABLE 2308.12.4
WALL BRACING IN SEISMIC DESIGN CATEGORIES D AND E
(Minimum Percentage of Wall Bracing per each Braced Wall Line^a)**

CONDITI ON	SHEATHING TYPE ^b	$S_{DS} < 0.50$	$0.50 \leq S_{DS} < 0.75$	$0.75 \leq S_{DS} \leq 1.00$	$S_{DS} > 1.00$
One Story	G-P ^c	43	59	75	100
	S-W ^d	21	32	37	48

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. Minimum length of panel bracing of one face of the wall for S-W sheathing shall be at least 4'-0" long or both faces of the wall for G-P sheathing shall be at least 8'-0" long; h/w ratio shall not exceed 2:1. For S-W panel bracing of the same material on two faces of the wall, the minimum length is permitted to be one-half the tabulated value but the h/w ratio shall not exceed 2:1 and design for uplift is required. The 2:1 h/w ratio limitation does not apply to alternate braced wall panels constructed in accordance with Section 2308.9.3.1 or 2308.9.3.2. Wall framing to which sheathing used for bracing is applied shall be nominal 2 inch wide [actual 1 1/2 inch (38 mm)] or larger members and spaced a maximum of 16 inches on center. Braced wall panel construction types shall not be mixed within a braced wall line.
- b. G-P = gypsum board, ~~fiberboard, particleboard, lath and portland cement plaster~~ or gypsum sheathing boards; S-W = wood structural panels ~~and diagonal wood sheathing.~~
- c. Nailing as specified below shall occur at all panel edges at studs, at top and bottom plates and, where occurring, at blocking:
 For 1/2-inch gypsum board, 5d (0.113 inch diameter) cooler nails at 7 inches on center;
 For 5/8-inch gypsum board, No 11 gage (0.120 inch diameter) cooler nails at 7 inches on center;
 For gypsum sheathing board, 1-3/4 inches long by 7/16-inch head, diamond point galvanized nails at 4 inches on center;
 For gypsum lath, No. 13 gage (0.092 inch) by 1-1/8 inches long, 19/64-inch head, plasterboard at 5 inches on center;
 For Portland cement plaster, No. 11 gage (0.120 inch) by 1 1/2 inches long, 7/16-inch head at 6 inches on center;
~~For fiberboard and particleboard, No. 11 gage (0.120 inch) by 1 1/2 inches long, 7/16-inch head, galvanized nails at 3 inches on center.~~
- d. S-W sheathing shall be a minimum of 15/32" thick nailed with 8d common placed 3/8 inches from panel edges and spaced not more than 6 inches on center and 12 inches on center along intermediate framing members.

2013 23-10. Section 2308.12.5 of the 2013 Edition of the California Building Code is amended to read as follows:

2308.12.5 Attachment of sheathing. Fastening of braced wall panel sheathing shall not be less than that prescribed in Table 2308.12.4 or 2304.9.1. Wall sheathing shall not be attached to framing members by adhesives. Staple fasteners in Table 2304.9.1 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 building official.

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 with four 8d nails per leg (total eight 8d nails per clip). Braced wall panels shall be laterally braced at each top corner and at maximum 24 inches (6096 mm) intervals along the top plate of discontinuous vertical framing.

RESIDENTIAL CODE AMENDMENTS

"§ 15.04.440 CHAPTER 3 AMENDED – BUILDING PLANNING

2013 R3-01. Section R301.1.3.2 of the 2013 Edition of the California Residential Code is amended to read as follows:

R301.1.3.2 Woodframe structures ~~greater than two stories.~~ The building official shall require construction documents to be approved and stamped by a California licensed architect or engineer for all dwellings of wood frame construction more than two stories and basement in height located in Seismic Design Category A, B or C. Notwithstanding other sections of law; the law establishing these provisions is found in Business and Professions Code Section 5537 and 6737.1.

The building official shall require construction documents to be approved and stamped by a California licensed architect or engineer for all dwellings of wood frame construction more than one story in height or with a basement located in Seismic Design Category D₀, D₁, D₂ or E.

2013 R3-02. Section R301.1.4 is added to Chapter 3 of the 2013 Edition of the California Residential Code to read as follows:

R301.1.4 Seismic design provisions for buildings constructed on or into slopes steeper than one unit vertical in three units horizontal (33.3 percent slope). The design and construction of new buildings and additions to existing buildings when constructed on or into slopes steeper than one unit vertical in three units horizontal (33.3 percent slope) shall comply with Section 1613.9 of the Building Code.

2013 R03-03. Table R301.2.2.1.1 and Section R301.2.2.1.2 of the 2013 Edition of the California Residential Code are amended to read as follows:

**TABLE R301.2.2.1.1
SEISMIC DESIGN CATEGORY DETERMINATION**

CALCULATED S_{DS}	SEISMIC DESIGN CATEGORY
$S_{DS} \leq 0.17g$	A
$0.17g < S_{DS} \leq 0.33g$	B
$0.33g < S_{DS} \leq 0.50g$	C
$0.50g < S_{DS} \leq 0.67g$	D ₀
$0.67g < S_{DS} \leq 0.83g$	D ₁
$0.83g < S_{DS} \leq 1.25g-1.00g$	D ₂
$1.25g-1.00g < S_{DS}$	E

R301.2.2.1.2 Alternative determination of Seismic Design Category E. Buildings located in Seismic Design Category E in accordance with Figure R301.2(2) are permitted to be reclassified

as being in Seismic Design Category D_2 provided one of the following is done:

1. A more detailed evaluation of the seismic design category is made in accordance with the provisions and maps of the *California Building Code*. Buildings located in Seismic Design Category E per Table R301.2.2.1.1, but located in Seismic Design Category D per the *California Building Code*, may be designed using the Seismic Design Category D_2 requirements of this code.
2. Buildings located in Seismic Design Category E that conform to the following additional restrictions are permitted to be constructed in accordance with the provisions for Seismic Design Category D_2 of this code:
 - 2.1. All exterior shear wall lines or *braced wall panels* are in one plane vertically from the foundation to the uppermost story.
 - 2.2. Floors shall not cantilever past the exterior walls.
 - 2.3. The building is within all of the requirements of Section R301.2.2.2.5 for being considered as regular.
 - 2.4. For buildings over one story in height, the calculated S_{DS} shall not exceed 1.25 g .

2013 R3-04. Items 1, 3 and 5 of Section R301.2.2.2.5 of the 2013 Edition of the California Residential Code are amended to read as follows:

1. When exterior shear wall lines or braced wall panels are not in one plane vertically from the foundation to the uppermost story in which they are required.

~~**Exception:** For wood light frame construction, floors with cantilevers or setbacks not exceeding four times the nominal depth of the wood floor joists are permitted to support braced wall panels that are out of plane with braced wall panels below provided that:~~

- ~~1. Floor joists are nominal 2 inches by 10 inches (51 mm by 254 mm) or larger and spaced not more than 16 inches (406 mm) on center.~~
 - ~~2. The ratio of the back span to the cantilever is at least 2 to 1.~~
 - ~~3. Floor joists at ends of braced wall panels are doubled.~~
 - ~~4. For wood frame construction, a continuous rim joist is connected at ends to all cantilever joists. When spliced, the rim joists shall be spliced using a galvanized metal tie not less than 0.058 inch (1.5 mm) (16 gage) and 1 1/2 inches (38 mm) wide fastened with six 16d nails on each side of the splice or a block of the same size as the rim joist of sufficient length to fit securely between the joist space at which the splice occurs fastened with eight 16d nails on each side of the splice; and~~
 - ~~5. Gravity loads carried at the end of cantilevered joists are limited to uniform wall and roof loads and the reactions from headers having a span of 18 feet (2438 mm) or less.~~
3. When the end of a braced wall panel occurs over an opening in the wall below and ends at a

~~horizontal distance greater than 1 foot (305 mm) from the edge of the opening. This provision is applicable to shear walls and braced wall panels offset in plane and to braced wall panels offset out of plane as permitted by the exception to item 1 above.~~

~~Exception: For wood light frame wall construction, one end of a braced wall panel shall be permitted to extend more than one foot (305 mm) over an opening not more than 8 feet (2438 mm) wide in the wall below provided that the opening includes a header in accordance with the following:~~

- ~~1. The building width, loading condition and framing member species limitations of Table R502.5(1) shall apply; and~~
- ~~2. Not less than one 2x12 or two 2x10 for an opening not more than 4 feet (1219 mm) wide; or~~
- ~~3. Not less than two 2x12 or three 2x10 for an opening not more than 6 feet (1829 mm) wide; or~~
- ~~4. Not less than three 2x12 or four 2x10 for an opening not more than 8 feet (2438 mm) wide; and~~
- ~~5. The entire length of the braced wall panel does not occur over an opening in the wall below.~~

5. When portions of a floor level are vertically offset.

Exceptions:

- ~~1. Framing supported directly by continuous foundations at the perimeter of the building.~~
- ~~2. For wood light frame construction, floors shall be permitted to be vertically offset when the floor framing is lapped or tied together as required by section R502.6.1.~~

2013 R3-05. Section R301.2.2.3.8 is added to Chapter 3 of the 2013 Edition of the California Residential Code to read as follows:

R301.2.2.3.8 Anchorage of Mechanical, Electrical, or Plumbing Components and Equipment. Mechanical, electrical, or plumbing components and equipment shall be anchored to the structure. Anchorage of the components and equipment shall be designed to resist loads in accordance with the International Building Code and ASCE 7, except where the component is positively attached to the structure and flexible connections are provided between the component and associated ductwork, piping, and conduit; and either

1. The component weighs 400 lb (1,780 N) or less and has a center of mass located 4 ft (1.22 m) or less above the supporting structure; or
2. The component weighs 20 lb (89N) or less or, in the case of a distributed system, 5 lb/ft (73 N/m) or less.

2013 R4-01. Section R401.1 of the 2013 Edition of the California Residential Code is amended to read as follows:

R401.1 Application. The provisions of this chapter shall control the design and construction of the foundation and foundation spaces for all buildings. In addition to the provisions of this chapter, the design and construction of foundations in areas prone to flooding as established by Table R301.2(1) shall meet the provisions of Section R322. Wood foundations shall be designed and installed in accordance with AF&PA PWF.

Exception: The provisions of this chapter shall be permitted to be used for wood foundations only in the following situations:

1. In buildings that have no more than two floors and a roof.
2. When interior basement and foundation walls are constructed at intervals not exceeding 50 feet (15 240 mm).

Wood foundations in Seismic Design Category D₀, D₁ or D₂ shall be ~~designed in accordance with accepted engineering practice not be permitted.~~

Exception: In non-occupied, single-story, detached storage sheds and similar uses other than carport or garage, provided the gross floor area does not exceed 200 square feet, the plate height does not exceed 12 feet in height above the grade plane at any point, and the maximum roof projection does not exceed 24 inches.

2013 R4-02. Sections R403.1.2, R403.1.3 and R403.1.5 of the 2013 Edition of the California Residential Code are amended to read as follows:

R403.1.2 Continuous footing in Seismic Design Categories D₀, D₁ and D₂. The braced wall panels at exterior walls of buildings located in Seismic Design Categories D₀, D₁ and D₂ shall be supported by continuous footings. All required interior braced wall panels in buildings ~~with plan dimensions greater than 50 feet (15240 mm)~~ shall also be supported by continuous footings.

R403.1.3 Seismic reinforcing. Concrete footings located in Seismic Design Categories D₀, D₁ and D₂, as established in Table R301.2(1), shall have minimum reinforcement. Bottom reinforcement shall be located a minimum of 3 inches (76 mm) clear from the bottom of the footing.

In Seismic Design Categories D₀, D₁ and D₂ where construction joint is created between a concrete footing and a stem wall, a minimum of one No. 4 bar shall be installed at not more than 4 feet (1219 mm) on center. The vertical bar shall extend to 3 inches (76 mm) clear of the bottom of the footing, have a standard hook and extend a minimum of 14 inches (357 mm) into the stem wall.

In Seismic Design Categories D₀, D₁ and D₂ where a grouted masonry stem wall is supported on a concrete footing and stem wall, a minimum of one No. 4 bar shall be installed at not more than 4 feet (1219 mm) on center. The vertical bar shall extend to 3 inches (76 mm) clear of the bottom of the footing and have a standard hook.

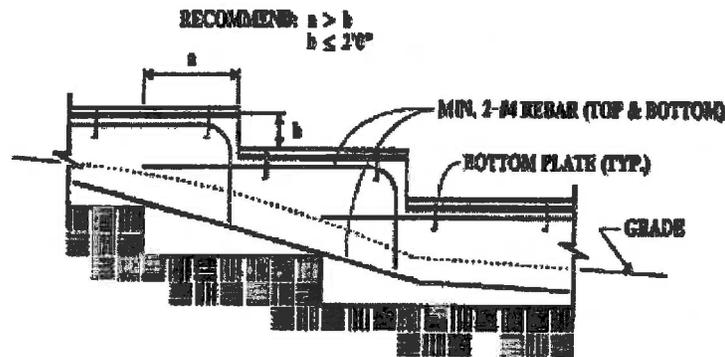
In Seismic Design Categories D₀, D₁ and D₂ masonry stem walls without solid grout and vertical reinforcing are not permitted.

Exception: In detached one- and two-family dwellings located in Seismic Design Category A, B or C which are three stories or less in height and constructed with stud bearing walls,

isolated plain concrete footings, supporting columns or pedestals are permitted.

R403.1.5 Slope. 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 located in Seismic Design Categories D₀, D₁ or D₂, stepped footings shall be reinforced with four No. 4 rebar. Two bars shall be placed at the top and bottom of the footings as shown in Figure R403.1.5.



STEPPED FOUNDATIONS

**FIGURE R403.1.5
STEPPED FOOTING**

2013 R313.1. Section R313.1 of the Residential Code is amended to read as follows:

R313.1 Where required. Approved automatic extinguishing systems shall be installed:

1. In all new R-2 occupancies.

EXCEPTIONS:

A) Detached Group U occupancies, providing the floor area does not exceed 1000 square feet.

B) Other minor buildings and/or occupancies as approved by the Fire Chief.

2. In existing Group R-2 Occupancies in which an addition of at least 50 percent of the existing square footage takes place.

R313.1.1 Design and installation. Automatic residential sprinkler systems for R-2 occupancies shall be designed and installed in accordance with NFPA 13D or NFPA 13R as amended by the Monrovia Municipal Code.

2013 R313.2. Section 313.2 of the Residential Code is amended to read as follows:

R313.2 One- and two-family dwelling automatic fire systems. Approved automatic extinguishing systems shall be installed in all new R-3 occupancies.

EXCEPTIONS:

A) Detached Group U occupancies, providing the floor area does not exceed 1000 square feet.

B) Other minor buildings and/or occupancies as approved by the Fire Chief.:-

2. Existing Group R-3 Occupancies in which an addition of at least 50 percent of the existing square footage takes place.

R313.2.1 Design and installation. Automatic residential sprinkler systems for R-3 occupancies shall be designed and installed in accordance with NFPA 13D as amended by the Monrovia Municipal Code.

2013 R313.3. Section 313.1 of the Residential Code is deleted in its entirety and amended to read as follows:

R313.3 Dwelling unit fire sprinkler systems. Dwelling unit fire sprinkler systems shall be designed and installed in accordance with NFPA 13D or NFPA 13R as amended by this section.

R313.3.1 NFPA 13R Sprinkler systems. Where allowed in buildings of Group R, up to and including buildings four stories in height, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13R with the following additions:

A) Attics shall be fully sprinklered with quick-response intermediate temperature heads.

B) Private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area.

C) A single exterior bell activated by the waterflow switch shall be provided at an approved location.

R313.3.2 NFPA 13D Sprinkler systems. Where allowed, automatic sprinkler systems installed in one- and two-family dwellings shall be installed throughout in accordance with NFPA 13D with the following additions:

A) Attics containing forced air units shall have one or more quick-response intermediate temperature sprinkler heads adjacent to each unit.

B) Attached private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area.

C) Attics and basements used for storage purposes shall be fully sprinklered with residential type heads.

D) A single exterior bell activated by the waterflow switch shall be provided at an approved location.

2013 R4-03. Section R404.2 of the 2013 Edition of the California Residential Code is amended to read as follows:

R404.2 Wood foundation walls. Wood foundation walls shall be constructed in accordance

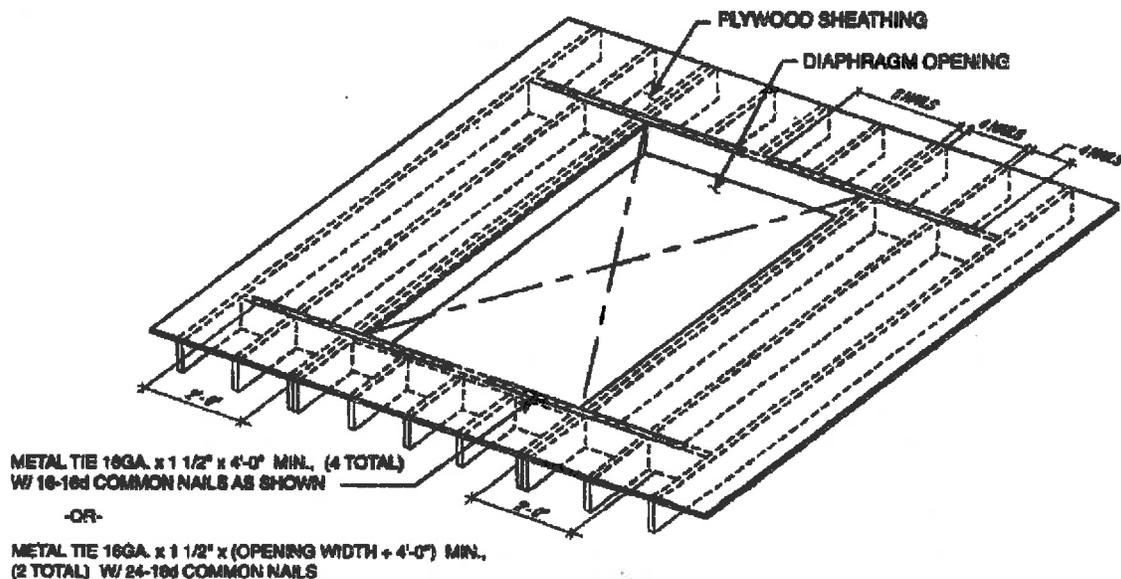
with the provisions of Sections R404.2.1 through R404.2.6 and with the details shown in Figures R403.1(2) and R403.1(3). Wood foundation walls shall not be used for structures located in Seismic Design Category D₀, D₁ or D₂.

2013 R5-01. Section R501.1 of the 2013 Edition of the California Residential Code is amended to read as follows:

R501.1 Application. The provisions of this chapter shall control the design and construction of the floors for all buildings including the floors of attic spaces used to house mechanical or plumbing fixtures and equipment. Mechanical or plumbing fixtures and equipment shall be attached (or anchored) to the structure in accordance with Section R301.2.2.3.8

2013 R5-02. Section R503.2.4 is added to Chapter 5 of the 2013 Edition of the California Residential Code to read as follows:

R503.2.4 Openings in horizontal diaphragms. Openings in horizontal diaphragms with a dimension perpendicular to the joist that is greater than 4 feet (1.2 m) shall be constructed in accordance with Figure R503.2.4.



For SE: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- Blockings shall be provided beyond headers.
- Metal ties not less than 0.058 inch [1.47 mm (16 galvanized gage)] by 1.5 inches (38 mm) wide with eight 16d common nails on each side of the header-joist intersection. The metal ties shall have a minimum yield of 33,000 psi (227 MPa).
- Openings in diaphragms shall be further limited in accordance with Section R301.2.2.2.5.

FIGURE R503.2.4
OPENINGS IN HORIZONTAL DIAPHRAGMS

2013 R6-01. Lines 37 and 38 of Table R602.3(1) of the 2013 Edition of the California

Residential Code are amended to read as follows:

TABLE R602.3(1)—continued
FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

ITEM	DESCRIPTION OF BUILDING MATERIALS	DESCRIPTION OF FASTENER ^{a,c}	SPACING OF FASTENERS	
			Edges (inches) ^d	Intermediate supports ^{e,g} (inches)
Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing				
32	$\frac{3}{8}$ " - $\frac{1}{2}$ "	6d common (2" x 0.113") nail (subfloor wall) ^f 8d common (2 $\frac{1}{2}$ " x 0.131") nail (roof) ^f	6	12 ^d
33	$\frac{19}{32}$ " - 1"	8d common nail (2 $\frac{1}{2}$ " x 0.131")	6	12 ^d
34	1 $\frac{1}{8}$ " - 1 $\frac{1}{4}$ "	10d common (3" x 0.148") nail or 8d (2 $\frac{1}{2}$ " x 0.131") deformed nail	6	12
Other wall sheathing ^b				
35	$\frac{1}{2}$ " structural cellulose fiberboard sheathing	1 $\frac{1}{2}$ " galvanized roofing nail, $\frac{7}{16}$ " crown or 1" crown staple 16 ga., 1 $\frac{1}{4}$ " long	3	6
36	$\frac{25}{32}$ " structural cellulose fiberboard sheathing	1 $\frac{3}{4}$ " galvanized roofing nail, $\frac{7}{16}$ " crown or 1" crown staple 16 ga., 1 $\frac{1}{2}$ " long	3	6
37 ^k	$\frac{1}{2}$ " gypsum sheathing ^d	1 $\frac{1}{2}$ " galvanized roofing nail; staple galvanized, 1 $\frac{1}{2}$ " long; 1 $\frac{1}{4}$ " screws, Type W or S	7	7
38 ^k	$\frac{5}{8}$ " gypsum sheathing ^d	1 $\frac{3}{4}$ " galvanized roofing nail; staple galvanized, 1 $\frac{3}{4}$ " long; 1 $\frac{1}{2}$ " screws, Type W or S	7	7
Wood structural panels, combination subfloor underlayment to framing				
39	$\frac{3}{4}$ " and less	6d deformed (2" x 0.120") nail or 8d common (2 $\frac{1}{2}$ " x 0.131") nail	6	12
40	$\frac{7}{8}$ " - 1"	8d common (2 $\frac{1}{2}$ " x 0.131") nail or 8d deformed (2 $\frac{1}{2}$ " x 0.120") nail	6	12
41	1 $\frac{1}{8}$ " - 1 $\frac{1}{4}$ "	10d common (3" x 0.148") nail or 8d deformed (2 $\frac{1}{2}$ " x 0.120") nail	6	12

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1 Ksi = 6.895 MPa.

- a. All nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less.
- b. Staples are 16 gage wire and have a minimum $\frac{7}{16}$ -inch on diameter crown width.
- c. Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.
- d. Four-foot by 8-foot or 4-foot by 9-foot panels shall be applied vertically.
- e. Spacing of fasteners not included in this table shall be based on Table R602.3(2).
- f. For regions having basic wind speed of 110 mph or greater, 8d deformed (2 $\frac{1}{2}$ " x 0.120") nails shall be used for attaching plywood and wood structural panel roof sheathing to framing within minimum 48-inch distance from gable end walls, if mean roof height is more than 25 feet, up to 35 feet maximum.
- g. For regions having basic wind speed of 100 mph or less, nails for attaching wood structural panel roof sheathing to gable end wall framing shall be spaced 6 inches on center. When basic wind speed is greater than 100 mph, nails for attaching panel roof sheathing to intermediate supports shall be spaced 6 inches on center for minimum 48-inch distance from ridges, eaves and gable end walls; and 4 inches on center to gable end wall framing.
- h. Gypsum sheathing shall conform to ASTM C 1396 and shall be installed in accordance with GA 253. Fiberboard sheathing shall conform to ASTM C 208.
- i. Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at all floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.
- j. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule, provide two toe nails on one side of the rafter and two nails from the ceiling joist to top plate in accordance with this schedule. The toe nail on the opposite side of the rafter shall not be required.

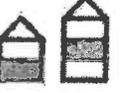
k. Use of staples in braced wall panels shall be prohibited in Seismic Design Category D0, D1, or D2.

2013 R6-02. Footnote "b" of Table R602.3(2) of the 2013 Edition of the California Residential Code is amended to read as follows:

b. Staples shall have a minimum crown width of $\frac{7}{16}$ -inch on diameter except as noted. Use of staples in roof, floor, subfloor, and braced wall panels shall be prohibited in Seismic Design Category D₀, D₁, or D₂.

2013 R6-03. Table R602.10.3(3) of the 2013 Edition of the California Residential Code is amended to read as follows:

TABLE R602.10.3(3)
BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY

<ul style="list-style-type: none"> • SOIL CLASS D⁺ • WALL HEIGHT = 10 FEET • 10 PSF FLOOR DEAD LOAD • 16 PSF ROOFCEILING DEAD LOAD • BRACED WALL LINE SPACING ≤ 25 FEET 			MINIMUM TOTAL LENGTH (FEET) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE ^a				
Seismic Design Category	Story Location	Braced Wall Line Length (feet)	Method L ¹ E ²	Method G ¹ B ²	Methods DWB, SFB, PBS, PCP, HPS, CS-SFB ^{3,4}	Method WSP	Methods CS-WSP, CS-G
C (townhouses only)		10	2.5	2.5	2.5	1.6	1.4
		20	5.0	5.0	5.0	3.2	2.7
		30	7.5	7.5	7.5	4.8	4.1
		40	10.0	10.0	10.0	6.4	5.4
		50	12.5	12.5	12.5	8.0	6.8
		10	NP	4.5	4.5	3.0	2.6
		20	NP	9.0	9.0	6.0	5.1
		30	NP	13.5	13.5	9.0	7.7
		40	NP	18.0	18.0	12.0	10.2
		50	NP	22.5	22.5	15.0	12.8
		10	NP	6.0	6.0	4.5	3.8
		20	NP	12.0	12.0	9.0	7.7
		30	NP	18.0	18.0	13.5	11.5
		40	NP	24.0	24.0	18.0	15.3
		50	NP	30.0	30.0	22.5	19.1
D ₁		10	NP	2.5 5.8	2.5 5.8	1.8	1.6
		20	NP	5.0 11.0	5.0 11.0	3.6	3.1
		30	NP	7.5 16.6	7.5 16.6	5.4	4.6
		40	NP	10.0 22.0	10.0 22.0	7.2	6.1
		50	NP	12.5 27.6	12.5 27.6	9.0	7.7
		10	NP	4.5 NP	4.5 NP	3.8	3.2
		20	NP	9.0 NP	9.0 NP	7.5	6.4
		30	NP	13.5 NP	13.5 NP	11.3	9.6
		40	NP	18.0 NP	18.0 NP	15.0	12.8
		50	NP	22.5 NP	22.5 NP	18.8	16.0
		10	NP	6.0 NP	6.0 NP	5.3	4.5
		20	NP	12.0 NP	12.0 NP	10.5	9.0
		30	NP	18.0 NP	18.0 NP	15.8	13.4
		40	NP	24.0 NP	24.0 NP	21.0	17.9
		50	NP	30.0 NP	30.0 NP	26.3	22.3

(continued)

TABLE R602.10.3(3)—continued
BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY

<ul style="list-style-type: none"> • SOIL CLASS D* • WALL HEIGHT = 10 FEET • 10 PSF FLOOR DEAD LOAD • 15 PSF ROOF/CEILING DEAD LOAD • BRACED WALL LINE SPACING ≤ 25 FEET 			MINIMUM TOTAL LENGTH (FEET) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE ^a					
Seismic Design Category	Story Location	Braced Wall Line Length (feet)	Method L1B ^c	Method GB ^d	Methods DWB, SFB, PBS, PCP, HPS, CS-SFB ^e	Method WSP	Methods CS-WSP, CS-G	
D ₁		10	NP	3.0 8.0	3.0 8.0	2.0	1.7	
		20	NP	6.0 12.0	6.0 12.0	4.0	3.4	
		30	NP	9.0 18.0	9.0 18.0	6.0	5.1	
		40	NP	12.0 24.0	12.0 24.0	8.0	6.8	
		50	NP	15.0 30.0	15.0 30.0	10.0	8.5	
		10	NP	6.0 NP	6.0 NP	4.5	3.8	
		20	NP	12.0 NP	12.0 NP	9.0	7.7	
		30	NP	18.0 NP	18.0 NP	13.5	11.5	
		40	NP	24.0 NP	24.0 NP	18.0	15.3	
		50	NP	30.0 NP	30.0 NP	22.5	19.1	
		10	NP	8.5 NP	8.5 NP	6.0	5.1	
		20	NP	17.0 NP	17.0 NP	12.0	10.2	
		30	NP	25.5 NP	25.5 NP	18.0	15.3	
		40	NP	34.0 NP	34.0 NP	24.0	20.4	
		50	NP	42.5 NP	42.5 NP	30.0	25.5	
D ₂		10	NP	4.0 8.0	4.0 8.0	2.5	2.1	
		20	NP	8.0 16.0	8.0 16.0	5.0	4.3	
		30	NP	12.0 24.0	12.0 24.0	7.5	6.4	
		40	NP	16.0 32.0	16.0 32.0	10.0	8.5	
		50	NP	20.0 40.0	20.0 40.0	12.5	10.6	
		10	NP	7.5 NP	7.5 NP	5.5	4.7	
		20	NP	15.0 NP	15.0 NP	11.0	9.4	
		30	NP	22.5 NP	22.5 NP	16.5	14.0	
		40	NP	30.0 NP	30.0 NP	22.0	18.7	
		50	NP	37.5 NP	37.5 NP	27.5	23.4	
		10	NP	NP	NP	NP	NP	NP
		20	NP	NP	NP	NP	NP	NP
		30	NP	NP	NP	NP	NP	NP
		40	NP	NP	NP	NP	NP	NP
		50	NP	NP	NP	NP	NP	NP
	Cripple wall below one- or two-story dwelling	10	NP	NP	NP	NP	7.5	6.4
		20	NP	NP	NP	NP	15.0	12.8
		30	NP	NP	NP	NP	22.5	19.1
		40	NP	NP	NP	NP	30.0	25.5
		50	NP	NP	NP	NP	37.5	31.9

For SI: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 pound per square foot = 0.0479 kPa.

a. Linear interpolation shall be permitted.

b. Wall bracing lengths are based on a soil site class "D." Interpolation of bracing length between the S_{ds} values associated with the Seismic Design Categories shall be permitted when a site-specific S_{ds} value is determined in accordance with Section 1613.3 of the *International Building Code*.

c. Method L1B shall have gypsum board fastened to at least one side with nails or screws per Table R602.3(1) for exterior sheathing or Table R702.3.5 for interior gypsum board. Spacing of fasteners at panel edges shall not exceed 8 inches.

d. Method CS-SFB applies in SDC C only.

e. Methods GB and PCP braced wall panel h/w ratio shall not exceed 1:1 in SDC D0, D1 or D2. Methods DWB, SFB, PBS, and HPS are not permitted in SDC D0, D1, or D2.

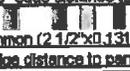
2013 R6-04. Table R602.10.4 of the 2013 Edition of the California Residential Code is amended to read as follows:

TABLE R602.10.4
BRACING METHODS 1

METHODS, MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA*		
			Fasteners	Spacing	
Intermittent Bracing Method	LIB Let-in-bracing		Wood: 2-8d common nails or 3-8d (2 1/2" long x 0.113" dia.) nails Metal strap: per manufacturer	Wood: per stud and top and bottom plates Metal: per manufacturer	
	DWB Diagonal wood boards		2-8d (2 1/2" long x 0.113" dia.) nails or 2 - 1 1/2" long staples	Per stud	
	WSP Wood structural panel (See Section R604)	$\frac{3}{8}$ " 15/32"		8d common (2 1/2" x 0.131) nails 3/8" edge distance to panel edge Exterior sheathing per Table R602.3(3) Interior sheathing per Table R602.3(1) or R602.3(2)	6" edges 12" field Varies by fastener 6" edges 12" field
	BV-WSP Wood Structural Panels with Stone or Masonry Veneer (See Section R602.10.6.5)	$\frac{7}{16}$ "	See Figure R602.10.6.5	8d common (2 1/2" x 0.131) nails	4" at panel edges 12" at intermediate supports 4" at braced wall panel end posts
	SFB Structural fiberboard sheathing	$\frac{1}{2}$ " or $\frac{23}{32}$ " for maximum 16" stud spacing		1 1/2" long x 0.12" dia. (for 1/2" thick sheathing) 1 7/8" long x 0.12" dia. (for 23/32" thick sheathing) galvanized roofing nails or 8d common (2 1/2" long x 0.131" dia.) nails	3" edges 6" field
	GB Gypsum board	$\frac{1}{2}$ "		Nails or screws per Table R602.3(1) for exterior locations Nails or screws per Table R702.3.5 for interior locations	For all braced wall panel locations: 7" edges (including top and bottom plates) 7" field
	PBS Particleboard sheathing (See Section R605)	$\frac{3}{8}$ " or $\frac{1}{2}$ " for maximum 16" stud spacing		For 3/8", 6d common (2" long x 0.113" dia.) nails For 1/2", 8d common (2 1/2" long x 0.131" dia.) nails	3" edges 6" field
	PCP Portland cement plaster	See Section R703.6 for maximum 16" stud spacing		1 1/2" long, 11 gage, 7/16" dia. head nails or 7/8" long, 16 gage staples ^d	6" o.c. on all framing members
	HPS Hardboard panel siding	$\frac{7}{16}$ " for maximum 16" stud spacing		0.092" dia., 0.225" dia. head nails with length to accommodate 1 1/2" penetration into studs	4" edges 8" field
	ABW Alternate braced wall	$\frac{3}{8}$ "		See Section R602.10.6.1	See Section R602.10.6.1

(continued)

TABLE R602.10.4—continued
BRACING METHODS¹

METHODS, MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA ^a	
			Fasteners	Spacing
Intermittent Bracing Methods	FFR Portal frame with hold-downs		See Section R602.10.6.2	See Section R602.10.6.2
	FFG Portal frame at garage		See Section R602.10.6.3	See Section R602.10.6.3
Continuous Sheathing Methods	CS-WSP Continuously sheathed wood structural panel	 8d common (2 1/2" x 0.131) nails 3/8" edge distance to panel edge	Exterior sheathing per Table R602.3(3) Interior sheathing per Table R602.3(1) or R602.3(2)	6" edges 12" field Varies by fastener— 6" edges 12" field
	CS-G ^{a,c} Continuously sheathed wood structural panel adjacent to garage openings	 3/8" edge distance to panel edge	See Method CS-WSP	See Method CS-WSP
	CS-PF Continuously sheathed portal frame	 3/8" edge distance to panel edge	See Section R602.10.6.4	See Section R602.10.6.4
	CS-SFB ^a Continuously sheathed structural fiberboard	 1/2" or 25/32" for maximum 16" stud spacing	1 1/2" long x 0.12" dia. (for 1/2" thick sheathing) 1 3/4" long x 0.12" dia. (for 25/32" thick sheathing) galvanized roofing nails or 8d common (2 1/2" long x 0.131" dia.) nails	3" edges 6" field

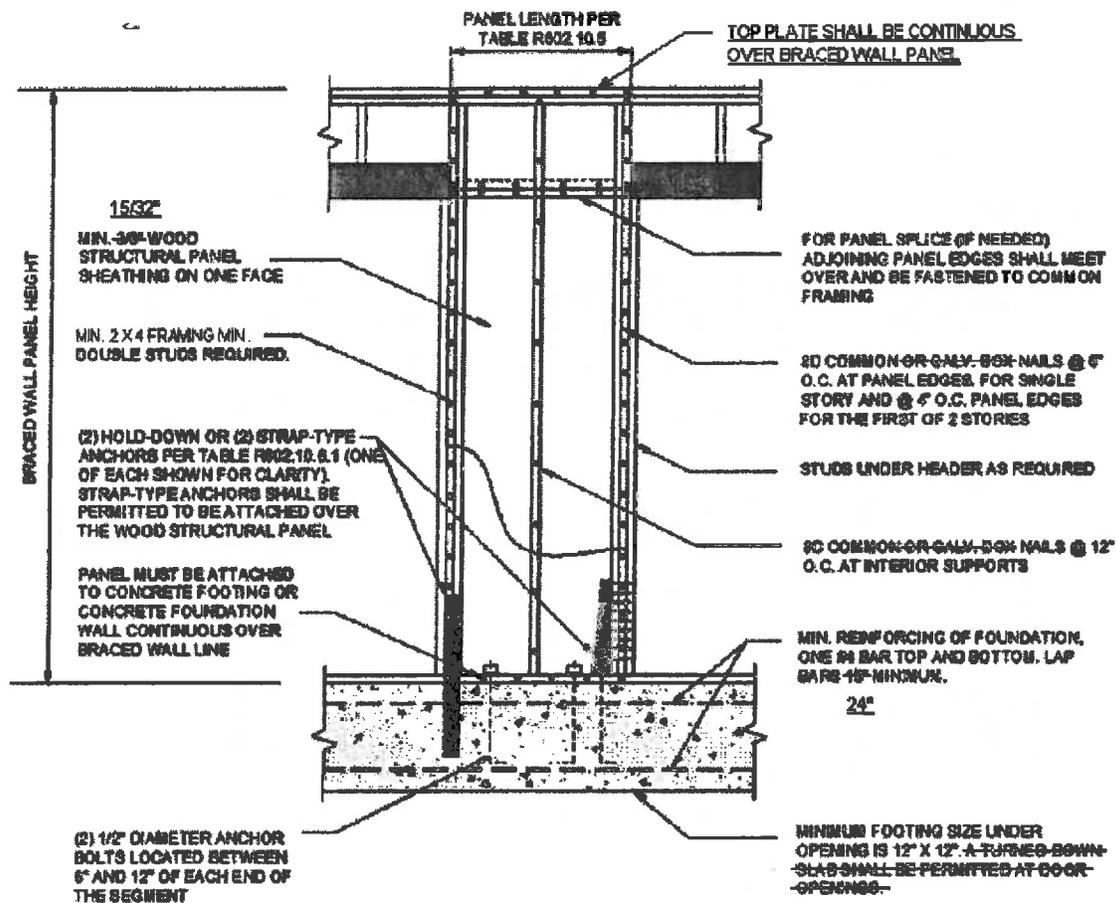
For SI: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 degree = 0.0175 rad, 1 pound per square foot = 47.8 N/m², 1 mile per hour = 0.447 m/s.

- Adhesive attachment of wall sheathing, including Method GB, shall not be permitted in Seismic Design Categories C, D₀, D₁, and D₂.
- Applies to panels next to garage door opening when supporting gable end wall or roof load only. May only be used on one wall of the garage. In Seismic Design Categories D₀, D₁, and D₂, roof covering dead load may not exceed 3 psf.
- Garage openings adjacent to a Method CS-G panel shall be provided with a header in accordance with Table R502.5(1). A full height clear opening shall not be permitted adjacent to a Method CS-G panel.
- Method CS-SFB does not apply in Seismic Design Categories D₀, D₁, and D₂, and in areas where the wind speed exceeds 100 mph.
- Method applies to detached one- and two-family dwellings in Seismic Design Categories D₀ through D₃ only.

¹ Methods GB and PCP braced wall panel h/w ratio shall not exceed 1:1 in SDC D0, D1, or D2. Methods LIB, DMB, SFB, PBS, HPS, and PFG are not permitted in SDC D0, D1, or D2.

a. Use of staples in braced wall panels shall be prohibited in SDC D0, D1, or D2.

2013 R6-05. Figure R602.10.6.1 of the 2013 Edition of the California Residential Code is amended to read as follows:



**FIGURE R602.10.6.1
METHOD ABW—ALTERNATE BRACED WALL PANEL**

2013 R6-06. Figure R602.10.6.2 of the 2013 Edition of the California Residential Code is amended to read as follows:

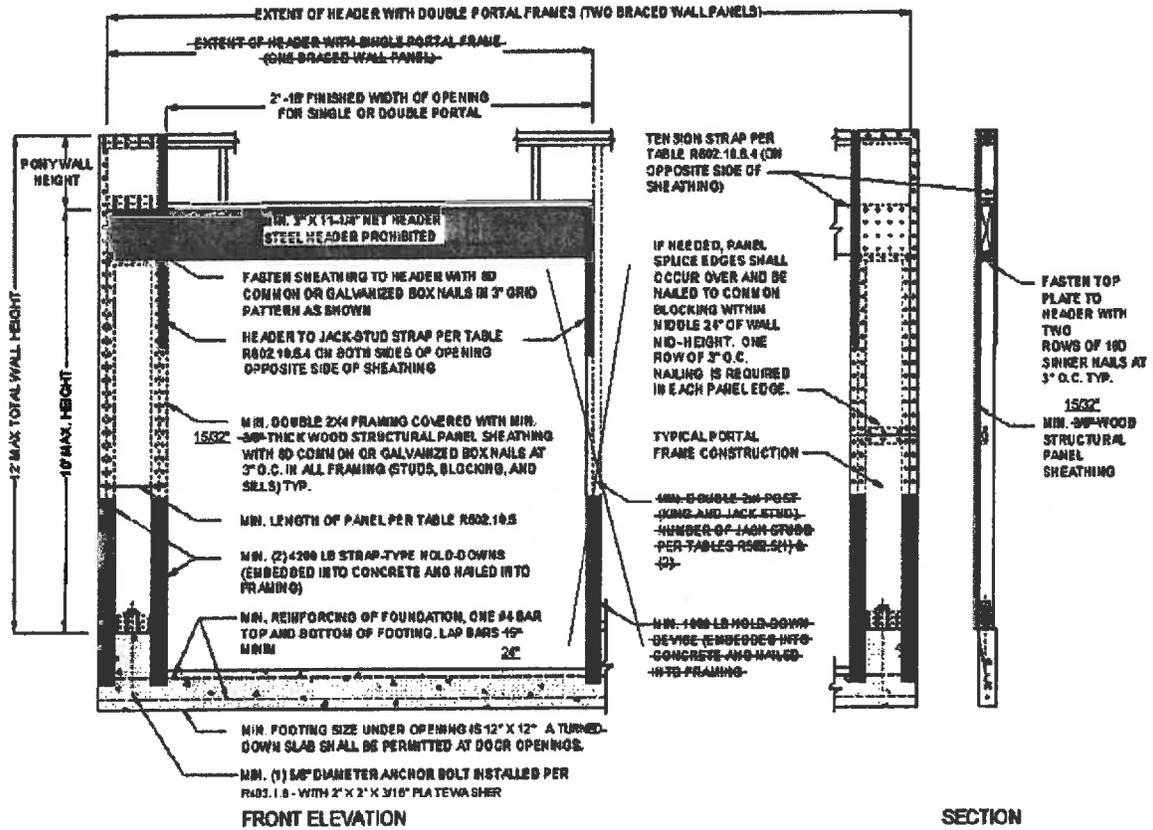


FIGURE R602.10.6.2
METHOD PFH—PORTAL FRAME WITH HOLD-DOWNS
AT DETACHED GARAGE DOOR OPENINGS

2013 R6-07. Table R602.10.5 of the 2013 Edition of the California Residential Code is amended to read as follows:

**TABLE R602.10.5
MINIMUM LENGTH OF BRACED WALL PANELS**

METHOD (See Table R602.10.4)	MINIMUM LENGTH ^a (inches)					CONTRIBUTING LENGTH (inches)	
	Wall Height						
	8 feet	9 feet	10 feet	11 feet	12 feet		
DWB, WSP, SFB, PBS, PCP, HPS, BV-WSP	48	48	48	53	58	Actual ^b	
GB	48	48	48	53	58	Double sided = Actual Single sided = 0.5 × Actual	
LIB	55	62	69	NP	NP	Actual ^b	
ABW	SDC A, B and C, wind speed < 110 mph	28	32	34	38	42	48
	SDC D ₁ , D ₂ and D ₃ , wind speed < 110 mph	32	32	34	NP	NP	
PFH	Supporting roof only	16-24	16-24	16-24	18-24 ^c	20-24 ^c	48
	Supporting one story and roof	24	24	24	27 ^c	29 ^c	48
PFG		24	27	30	33 ^d	36 ^d	1.5 × Actual ^b
CS-G		24	27	30	33	36	Actual ^b
CS-PF		16-24	18-24	20-24	22 ^e -24 ^e	24 ^e	Actual ^b
CS-WSP, CS-SFB	Adjacent clear opening height (inches)						Actual ^b
	≤ 64	24	27	30	33	36	
	68	26	27	30	33	36	
	72	27	27	30	33	36	
	76	30	29	30	33	36	
	80	32	30	30	33	36	
	84	35	32	32	33	36	
	88	38	35	33	33	36	
	92	43	37	35	35	36	
	96	48	41	38	36	36	
	100	—	44	40	38	38	
	104	—	49	43	40	39	
	108	—	54	46	43	41	
	112	—	—	50	45	43	
	116	—	—	55	48	45	
	120	—	—	60	52	48	
	124	—	—	—	56	51	
128	—	—	—	61	54		
132	—	—	—	66	58		
136	—	—	—	—	62		
140	—	—	—	—	66		
144	—	—	—	—	72		

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

NP = Not Permitted.

a. Linear interpolation shall be permitted.

b. Use the actual length when it is greater than or equal to the minimum length.

c. Maximum header height for PFH is 10 feet in accordance with Figure R602.10.6.2, but wall height may be increased to 12 feet with pony wall.

d. Maximum opening height for PFG is 10 feet in accordance with Figure R602.10.6.3, but wall height may be increased to 12 feet with pony wall.

e. Maximum opening height for CS-PF is 10 feet in accordance with Figure R602.10.6.4, but wall height may be increased to 12 feet with pony wall.

2013 R6-10. Section R602.10.9.1 of the 2013 Edition of the California Residential Code is deleted in its entirety:

~~**R602.10.9.1 Braced wall panel support for Seismic Design Category D₂.** In one-story buildings located in Seismic Design Category D₂, braced wall panels shall be supported on continuous foundations at intervals not exceeding 50 feet (15 240 mm). In two-story buildings located in Seismic Design Category D₂, all braced wall panels shall be supported on continuous foundations.~~

~~**Exception:** Two-story buildings shall be permitted to have interior braced wall panels supported on continuous foundations at intervals not exceeding 50 feet (15 240 mm) provided that:~~

- ~~1. The height of cripple walls does not exceed 4 feet (1219 mm).~~
- ~~2. First-floor braced wall panels are supported on doubled floor joists, continuous blocking or floor beams.~~
- ~~3. The distance between bracing lines does not exceed twice the building width measured parallel to the braced wall line.~~

2013 R6-11. Section R606.2.4 of the 2013 Edition of the California Residential Code is amended to read as follows:

R606.2.4 Parapet walls. Unreinforced solid masonry parapet walls shall not be less than 8 inches (203 mm) thick and their height shall not exceed four times their thickness. Unreinforced hollow unit masonry parapet walls shall be not less than 8 inches (203 mm) thick, and their height shall not exceed three times their thickness. Masonry parapet walls in areas subject to wind loads of 30 pounds per square foot (1.44 kPa) or located in Seismic Design Category D₀, D₁ or D₂, or on townhouses in Seismic Design Category C shall be reinforced in accordance with Section R606.12.

2013 R6-12. Section R606.12.2.2.3 of the 2013 Edition of the California Residential Code is amended to read as follows:

R606.12.2.2.3 Reinforcement requirements for masonry elements. Masonry elements listed in Section R606.12.2.2.2 shall be reinforced in either the horizontal or vertical direction as shown in Figure R606.11(2) R606.11(3) and in accordance with the following:

1. Horizontal reinforcement. Horizontal joint reinforcement shall consist of at least two longitudinal W1.7 wires spaced not more than 16 inches (406 mm) for walls greater than 4 inches (102 mm) in width and at least one longitudinal W1.7 wire spaced not more than 16 inches (406 mm) for walls not exceeding 4 inches (102 mm) in width; or at least one No. 4 bar spaced not more than 48 inches (1219 mm). Where two longitudinal wires of joint reinforcement are used, the space between these wires shall be the widest that the mortar joint will accommodate. Horizontal reinforcement shall be provided within 16 inches (406 mm) of the top and bottom of these masonry elements.
2. Vertical reinforcement. Vertical reinforcement shall consist of at least one No. 4 bar spaced not more than 48 inches (1219 mm). Vertical reinforcement shall be within 46-8 inches (406mm) of the ends of masonry walls.

2013 R6-13. Exception of Section R602.3.2 of the 2013 Edition of the California Residential Code is amended to read as follows:

Exception: Aln other than Seismic Design Category D₀, D₁ or D₂, a single top plate may be installed in stud walls, provided the plate is adequately tied at joints, corners and intersecting walls by a minimum 3-inch-by-6-inch by a 0.036-inch-thick (76 mm by 152 mm by 0.914 mm) galvanized steel plate that is nailed to each wall or segment of wall by six 8d nails on each side, provided the rafters or joists are centered over the studs with a tolerance of no more than 1 inch (25 mm). The top plate may be omitted over lintels that are adequately tied to adjacent wall sections with steel plates or equivalent as previously described.

2013 R8-01. Section R803.2.4 is added to Chapter 8 of the 2013 Edition of the California Residential Code to read as follows:

R803.2.4 Openings in horizontal diaphragms. Openings in horizontal diaphragms shall conform with Section R503.2.4.

2013 R10-01. Section R1001.3.1 of the 2013 Edition of the California Residential Code is amended to read as follows:

R1001.3.1 Vertical reinforcing. For chimneys up to 40 inches (1016 mm) wide, four No. 4 continuous vertical bars adequately anchored into the concrete foundation shall be placed between wythes of solid masonry or within the cells of hollow unit masonry and grouted in accordance with Section R609. Grout shall be prevented from bonding with the flue liner so that the flue liner is free to move with thermal expansion. For chimneys more than 40 inches (1016 mm) wide, two additional No. 4 vertical bars adequately anchored into the concrete foundation shall be provided for each additional flue incorporated into the chimney or for each additional 40 inches (1016 mm) in width or fraction thereof."

GREEN BUILDING STANDARDS CODE AMENDMENTS

"§ 15.04.450 CHAPTER 1 AMENDED – ADMINISTRATION

2013 G1-01. Section 101.12 is added to the 2013 Edition of the California Green Building Standards Code to read as follows:

101.12 Fee for Mandatory Measures. A fee of ten percent (10%) of the plan check/permit fee shall be assessed to verify compliance with the mandatory measure of the California Green Building Standards Code.

2013 G1-02. Section 101.12.1 is added to the 2013 Edition of the California Green Building Standards Code to read as follows:

101.12.1 Fee for Tier Measures. When Tier 1 or Tier 2 measures need to be verified by the enforcing agency, an additional ten percent (10%) of the plan check/permit fee may be assessed.

2013 G2-01. Section 202 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

SUSTAINABILITY. Consideration of present development and construction impacts on the community, the economy, and the environment without compromising the needs of the future.

2013 G3-01. Section 301.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

301.1 Scope. Buildings shall be designed to include the green building measures specified as mandatory in the application checklists contained in this code. "

"§ 15.04.450 CHAPTER 4 AMENDED – RESIDENTIAL MANDATORY MEASURES.

2013 G3-02. Section 301.1.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

Section 301.1.1 Additions and alterations. [HCD] The mandatory provisions of Chapter 4 shall be applied to additions or alterations of existing residential buildings ~~where the additions or alterations increase the building's conditioned area, volume, or size. The requirement shall apply only to and/or within the specific area of the addition or alteration.~~ Code sections relevant to additions and alterations shall only apply to the portions of the building being added or altered within the scope of the permitted work.

2013 G5-01. Section 5.408.3 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

5.408.3 Excavated soil and land clearing debris [BSC] 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed.

Exception: Reuse, either on-or off-site, of vegetation or soil contaminated by disease or pest infestation.

Notes:

1. If contamination by disease or pest infestation is suspected, contact the County Agricultural Commissioner and follow its direction for recycling or disposal of the material. (www.cdfa.ca.gov/exec/county/county_contacts.html)
2. For a map of known pest and/or disease quarantine zones, consult with the California Department of Food and Agriculture. (www.cdfa.ca.gov)
3. Contaminated soil shall not be reused and shall be disposed of or remediated in accordance with relevant regulations.

2013 G6-01. Section 601.1 is added to the 2013 Edition of the California Green Building Standards Code to read as follows:

601.1. This section lists the organization and standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard.

2013 GA4-07. Section A4.405.4 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A4.405.4 Use of building materials from rapidly renewable sources. One or more of the following materials manufactured from rapidly renewable sources or agricultural by-products is used for a minimum of 2.5 percent of the total value, based on estimated cost of materials on the project:

1. Insulation
2. Bamboo or cork
3. Engineered products
4. Agricultural based products
5. Other products acceptable to the enforcing agency

Note: The intent of this section is to utilize building materials and products which are typically harvested within a 10-year or shorter cycle

2013 GA4-08. Section A4.407.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A4.407.1 Drainage around foundations. Install foundation and landscape drains which discharge to a dry well, sump, bioswale or other approved on-site location except when not required by state code or locally approved ordinance.

2013 GA4-09. Sections A4.408.1 and A4.408.1.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A4.408.1 Enhanced construction waste reduction. Nonhazardous construction and demolition debris generated at the site is diverted to recycle or salvage in compliance with one of the following:

Tier 1. At least a 65 percent reduction

Tier 2. At least a 75 percent reduction

Exceptions:

- ~~1. Equivalent or alternative waste reduction methods are developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.~~
- ~~2. The enforcing agency may make exceptions to the requirements of this section when jobsites are located in areas beyond the haul boundaries of the diversion facility.~~

~~**A4.408.1.1 Documentation.** Documentation shall be provided to the enforcing agency which demonstrates compliance with this section. Documentation shall be in compliance with Section 4.408.5.~~

2013 GA5-01. Section A5.106.4.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A5.106.4.1 Reserved Short-term bicycle parking. If the project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 15 percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack.

2013 GA5-02. Table A5.106.4.3 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A5.106.4.3 Changing rooms. For buildings with over 10 tenant-occupants, provide changing/shower facilities for tenant-occupants only in accordance with Table A5.106.4.3 or document arrangements with nearby changing/shower facilities.

TABLE A5.106.4.3

NUMBER OF TENANT-	SHOWER/CHANGING FACILITIES REQUIRED ²	2-TIER (12" X 15" X 72") PERSONAL EFFECTS
0-10	1 unisex shower	1
11-50	1 unisex shower	2
51-100	1 unisex shower	3
101-200	1 shower stall per gender	4
Over 200	1 shower stall per gender for each 200 additional tenant-occupants	One 2-tier locker for each 50 additional tenant-occupants

- ~~1. One 2-tier locker serves two people. Lockers shall be lockable with either padlock or combination lock.~~
- ~~2. Tenant spaces housing more than 10 tenant-occupants within buildings sharing common toilet facilities need not comply; however, such common shower facilities shall accommodate the total number of tenant-occupants served by the toilets and include a minimum of one unisex shower and two 2-tier lockers.~~

Note: Additional information on recommended bicycle accommodations may be obtained from Sacramento Area Bicycle Advocates

2013 GA5-03. Section A5.106.6.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A5.106.6.1 Reduce parking capacity. With the approval of the enforcement authority, employ strategies to reduce on-site parking area by 20% by

1. Use of on street parking or compact spaces, illustrated on the site plan or
2. Implementation and documentation of programs that encourage occupants to carpool, ride share or use alternate transportation.

Note: Strategies for programs may be obtained from local TMAs.

2013 GA5-04. Section A5.106.11.2, Table A5.106.11.2.2 and Table A5.106.11.2.3 of the 2013 Edition of the California Green Building Standards Code are amended to read as follows:

A5.106.11.2 Cool Roof for reduction of heat island effect. Use roofing materials having a minimum aged solar reflectance and thermal emittance complying with Sections A5.106.11.2.1 and A5.106.11.2.2 or a minimum aged Solar Reflectance Index (SRI) complying with Section A5.106.11.2.3 and as shown in Table A5.106.11.2. 2 for Tier 1 or Table A5.106.11.2.3 for Tier 2.

Exceptions:

- ~~1. Roof constructions that have a thermal mass over the roof membrane, including areas of vegetated (green) roofs, weighing at least 25 lb/sf~~

2. ~~Roof area covered by building integrated solar photovoltaic and building integrated solar thermal panels.~~

**TABLE A5.106.11.2.2 [BSC]
TIER 1**

ROOF SLOPE	CLIMATE ZONE	MINIMUM 3-YEAR AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SRI
□ 2:12	1 - 16	0.55 0.63	0.75	64 82
□ 2:12	1 - 16	0.20	0.75	46 27

**TABLE A5.106.11.2.3
TIER 2**

ROOF SLOPE	CLIMATE ZONE	MINIMUM 3-YEAR AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SRI
□ 2:12	1 - 16	0.65 0.68	0.85	78 85
□ 2:12	1 - 16	0.30 0.28	0.85	30 35

2013 GA5-05. Section A5.406.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A5.406.1 Choice of materials. Compared to other products in a given product category, choose materials proven to be characterized by one or more of the following for a minimum of 5 percent of the total value, based on estimated cost of materials on the project.

Section 2. Chapter 15.20 ("Fire Code") of the Monrovia Municipal Code is hereby amended as follows. Existing Monrovia Municipal Code Sections un-changed by this Ordinance shall remain in effect, with the exception of existing references to previous editions of the codes referenced, which are hereby repealed and replaced with the editions adopted by reference in this Ordinance:

"§ 15.20.010 FIRE CODE ADOPTED.

(A) With the exception of the additions, deletions and amendments set forth in this Chapter, Part 9 of Title 24 of the California Code of Regulations, comprising the California Fire Code ~~2010~~ 2013 Edition, which incorporates and amends the International Fire Code 2009 ~~2012~~ Edition, published by the International Code Council, including Appendices Chapter 4, and B, C, D, E, F, G, H, I and K ~~through J~~ and the International Fire Code standards, is hereby adopted by reference as the Fire Code of the City.

(B) A copy of such code has been deposited in the office of the City Clerk and shall be at all times maintained by the City Clerk for use and examination by the public."

"§ 15.20.020 PURPOSE.

The purpose of this code is to establish the minimum requirements consistent with nationally recognized good practice for providing a reasonable level of life safety and property protection from the hazards of fire, explosions or dangerous conditions in new and existing buildings, structures and premises and to provide safety to firefighters and emergency responders during

emergency operations. The titles to the various secondary codes listed in § 15.20.010 indicate more particularly the specific purposes contributing to the safeguarding of life and property from the hazards of fire and explosion."

"§ 15.20.030 SUBSTITUTION OF TERMS.

The following words and phrases used in the Fire Code shall have the meanings set forth below whenever used in this Chapter:

For the word or phrase: Substitute:
City, agency or municipality: City of Monrovia
Legislative body: City Council
Fire Department: City of Monrovia Fire Department
Chief: Fire Chief of the Monrovia Fire Department
Fire Code Official: Chief or his/her appointee"

"§ 15.20.040 SECTION 103.4 OF CHAPTER 1 AMENDED—NON-LIABILITY OF CITY OR OFFICIAL.

Section 103.4 of Chapter 1 of the Fire Code is hereby amended by adding an opening paragraph to read as follows:

This Code shall not be construed to hold the City or any officer or employee of the City responsible for any damage to persons or property by reason of the inspection or re-inspection authorized herein or failure to inspect or re-inspect or the permit issued as herein provided or by reason of the approval or disapproval of any equipment authorized herein."

Section 108.1 of Chapter 1 of the Fire Code is hereby amended to read as follows:
Appeals to Planning Commission. Whenever the Chief disapproves an application or refuses to grant a license or permit applied for, or when it is claimed that the provisions of the code do not apply or that the true intent and meaning of the Code has been misconstrued or wrongly interpreted, the applicant may appeal from the decision of the Chief of the fire department to the Planning Commission of the City of Monrovia, as set forth in Section 2.52.060 of the Monrovia Municipal Code, within thirty days from the date of the decision of the Chief."

"15.20.060 SECTION 104.1 OF CHAPTER 1 AMENDED—PROSECUTION OF ARSON STATUTE.

Section 104.1 of Chapter 1 of the Fire Code is hereby amended to read as follows:

The Fire Code Official is hereby authorized for the apprehension and prosecution of anyone suspected of violating any fire law or arson statute, to enforce the provisions of this Code and shall have the authority to render interpretations of this Code, and to adopt policies, procedures, rules and regulations in order to clarify the application of its provisions. Such interpretations, policies, procedures, rules and regulations shall be in compliance with the intent and purpose of this Code and shall not have the effect of waiving requirements specifically provided for in this Code."

"§ 15.20.070 SECTION 103.3 OF CHAPTER 1 AMENDED—PERSONNEL POWERS.

Section 103.3 of Chapter 1 of the Fire Code is hereby amended by changing the title to read "Fire prevention bureau and arson investigation unit personnel and police" and to read as follows:

In accordance with the prescribed procedures of this jurisdiction and with the concurrence of the appointing authority, the Chief shall have the authority to appoint fire prevention personnel and arson investigators. Members of the arson investigation unit shall, complete the requirements set forth in California Penal Code section 832 and have the powers of a police officer in performing their duties."

"§ 15.20.075 SECTION 105.6.27 AMENDED-LP-GAS.

Section 105.6.27 of the Fire Code is hereby amended to read as follows:

An operational permit is required for :

1. Storage and use of LP-gas on land zoned "manufacturing".

Exception: A permit is not required for individual containers with a 500-gallon (1893 L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 500-gallons (1893 L), used exclusively for emergency power generation serving Group R-3 occupancies not located in the Wildland-Urban Interface area.

2. Operation of cargo tankers that transport LP-gas."

"§ 15.20.080 SECTION 307.1.1 AMENDED-PROHIBITED OPEN BURNING.

Section 307.1.1 of the Fire Code is hereby amended to read as follows:
Prohibited open burning.

Open burning that is offensive or objectionable because of smoke emissions or when atmospheric conditions or local circumstances make such fires hazardous shall be prohibited. No person shall dispose of any combustible waste material by burning, or kindle or maintain any bonfire, rubbish fire, incinerator, or other outside non-permitted fireplace or chimney, or authorize any such fire to be kindled or maintained on any lot or parcel of land within the city without a written permit from the Chief of the fire department."

"§15.20.090 CHAPTER 5 SECTIONS 503.2.1 AMENDED-DIMENSIONS AND 503.3.

Fire Apparatus Access Roads 503.2.1 Dimensions

503.2.1 is amended and Table 503.2.1-A is added to the California Fire Code to read in their entirety as follows:

503.2.1 Private roads used for fire apparatus access. The minimum width of private roads which are also used for fire apparatus access shall be in accordance with Table 503.2.1-A. The minimum required width for fire apparatus access should not be used to determine the minimum width of private roads. When approved by the chief this requirement may be modified or waived. Table 503.2.1-A. Minimum Width of Private Roads Also Used for Fire Apparatus Access

<i>Location of Parking</i>	<i>Minimum Road Width</i>
Parking not permitted on road	25 <u>20</u>
Parking permitted on one side only	28 <u>26</u>
Parking permitted on both sides	34 <u>32</u>

SECTION 503.3 AMENDED—FIRE LANE MARKING/SIGNAGE.

Section 503.3 of the Fire Code is hereby amended to read as follows:

Fire Lane Marking/Signage. The designation shall be indicated:

- (1) By a sign posted immediately adjacent to, and visible from, the designated place clearly stating in letters not less than one inch in height that the place is a fire lane;
- (2) By outlining or painting the place in red and, in contrasting color, marking the place with the words "FIRE LANE", which are clearly visible from the vehicle, or
- (3) By a red curb or red paint on the edge of the roadway upon which clearly marked the words "FIRE LANE". The Chief shall have the authority to designate fire apparatus access roads on private property.

SECTION 503.2.4 AMENDED - TURNING RADIUS

Section 503.2.4 of the Fire Code is hereby amended to read as follows:

Turning radius. Fire apparatus access roads shall have a minimum 38-foot (11590 mm) centerline radius [28-foot (8540 mm) inside radius, 48-foot (14640 mm) outside radius] on curves."

§ 15.20.110 RESERVED, SECTION 503.3 AMENDED - FIRE LANE MARKING/SIGNAGE.

Section 503.3 of the Fire Code is hereby amended to read as follows:

Fire Lane Marking/Signage. The designation shall be indicated:

- (1) By a sign posted immediately adjacent to, and visible from, the designated place clearly stating in letters not less than one inch in height that the place is a fire lane;
- (2) By outlining or painting the place in red and, in contrasting color, marking the place with the words "FIRE LANE", which are clearly visible from the vehicle, or
- (3) By a red curb or red paint on the edge of the roadway upon which clearly marked the words "FIRE LANE". The Chief shall have the authority to designate fire apparatus access roads on private property."

§ 15.20.130 RESERVED, SECTION 903.2 AMENDED - AUTOMATIC SPRINKLER SYSTEMS.

Section 903.2 of the Fire Code is hereby amended to read as follows:

§ 15.20.140 SECTION 903.2 AMENDED—AUTOMATIC SPRINKLER SYSTEMS.

Section 903.2 of the Fire Code is hereby amended to read as follows:

1. In all new buildings regardless of the type of construction or occupancy.

EXCEPTIONS:

A) Detached Group U occupancies, providing the floor area does not exceed 1000 square feet.

B) Other minor buildings and/or occupancies as approved by the Fire Chief.

2. In existing buildings with new occupancies as required by other sections of the Fire Code.

RATIONALE: New text allows small detached garages/workshops with low fire load and no life safety issues to be non-sprinklered.

FINDINGS: Local climatic and geographic conditions—The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection.

The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, and due to some older nonconforming buildings, it is necessary during the new construction or building renovation to

~~use the City ordinance to control and minimize conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion.~~

SECTION 903.2.18 AMENDED—GROUP U PRIVATE GARAGES AND CARPORTS ACCESSORY TO GROUP R-3 OCCUPANCIES.

Section 903.2.18 of the Fire Code is hereby amended to read as follows:

Carports with habitable space above, detached private garages over 1000 square feet in area, and attached private garages shall be protected by fire sprinklers in accordance with this section. These areas shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used."

"§ 15.20.150 SECTION 903.3.1.2 AMENDED - NFPA 13R SPRINKLER SYSTEM.

Section 903.3.1.2 of the Fire Code is hereby amended to read as follows:

Where allowed in buildings of Group R, up to and including buildings four stories in height, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13R with the following additions:

(a) Attics shall be fully sprinklered with quick-response intermediate temperature heads.

(b) Private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area."

"§ 15.20.160 SECTION 903.3.1.3 AMENDED - NFPA 13D SPRINKLER SYSTEM.

Section 903.3.1.3 of the Fire Code is hereby amended to read as follows:

Where allowed in buildings of Group R, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13D with the following additions:

(a) Attics containing forced air units shall have one or more quick-response intermediate temperature sprinkler heads adjacent to each unit.

(b) Private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area.

(c) Attics and basements used for storage purposes shall be fully sprinklered with residential type heads.

(d) A single exterior bell activated by the waterflow switch shall be provided at an approved location."

"§ 15.20.170 SECTION 903-6 1103.5 AMENDED - AUTOMATIC SPRINKLER SYSTEMS IN EXISTING BUILDINGS.

Section 903-6 1103.5 of the Fire Code is hereby amended to read as follows:

An automatic fire sprinkler system shall be installed throughout the following existing buildings:

(a) Existing Group R, Division 1, 2, 2.1, 3, 3.1 or 34 Occupancies in which an addition of at least 50 percent of the existing square footage takes place.

(b) Commercial buildings over 5,000 square feet when an addition is made.

(c) Commercial buildings under 5,000 square feet when an addition is made that will make the total area greater than 5,000 square feet.

(d) In buildings with new occupancies as required by other sections of the Fire Code."

"§15.20.180 SECTIONS 603.8 AMENDED - INCINERATORS AND OPEN BURNING.

Section 603.8 of the Fire Code is hereby amended as follows:
Incinerators and open burning are prohibited except as provided under Section 307.1."

"§ 15.20.190 SECTION 806.1.1. AMENDED - CHRISTMAS TREES.

Section 806.1.1 is hereby amended as follows:
806.1.1 Restricted occupancies. Natural cut trees shall be prohibited in Group A, E, I-1, I-2, I-2.1, I-3, I-4, M, R-1, R-2 and R-4 occupancies.

EXCEPTIONS:

1. Trees located in areas protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 shall not be prohibited in Group A, E, M, R-1, and R-2.
2. Trees in unsprinklered areas of Group A, E, M, R-1 and R-2 occupancies when treated with a flame retardant material that has been approved by the California State Fire Marshal. Each tree treated with a flame retardant material shall bear a tag which shows the date treated, name of the applicator, and the registration number of the flame retardant material.
3. Trees shall be allowed within dwelling units in Group R-2 occupancies."

"§ 15.20.195 SECTION 806.1.4 ADDED - CHRISTMAS TREE LOTS.

Sections 806.1.4.1 - 806.1.4.11 are hereby amended and added as follows:

Permit and Plan.

806.1.4.1 A permit is required to establish, maintain or operate a Christmas tree lot. Application for permit shall be submitted to the chief for approval. ~~For Permits for Christmas Tree Lots and Tents, Canopies and Temporary Membrane Structures, see Chapter 24.~~

806.1.4.2 No person, including a holder of an un-revoked general merchandise license shall operate a Christmas tree lot without a permit issued pursuant to this section. A permit shall not be granted if the chief reasonably determines that the location or method of operation endangers life or constitutes a fire hazard. A permit may be revoked if the provisions of these sections are not met or maintained.

806.1.4.3 A permit granted pursuant to this section shall be valid from November 15th to December 25th of the year in which the permit is issued.

806.1.4.4 An applicant for a permit shall submit a dimensional plot plan of the proposed location with the application. The plot plan shall show the location of the Christmas trees, buildings, trailers, tents, temporary structures, aisle widths, fenced areas, emergency exits and portable fire extinguishers.

Location.

806.1.4.5 No person shall use any location for a Christmas tree lot where dry grass, weeds, paper, combustible waste or other combustible materials exist.

806.1.4.6 Christmas trees shall not be located within 15 feet of any building, trailer, structure or temporary building which is not necessary to the operation of the Christmas tree lot.

806.1.4.7 Christmas trees shall not be located within 25 feet of any facility where flammable or combustible liquids are produced, stored, handled or dispensed.

Fire Protection.

806.1.4.8 Portable Fire Extinguisher. A minimum of (2) two 2A:10BC rated fire extinguishers shall be provided. Travel distance to fire extinguishers shall not exceed 50 feet.

Sources of Ignition.

806.1.4.9 Smoking or open flames shall not be permitted upon any Christmas tree lot. Approved "NO SMOKING" signs shall be posted as required.

806.1.4.10 An approved fused electrical source shall be provided. If extension cords are used, they shall be a minimum size of 12-gauge wire, have grounding capabilities and be UL (Underwriters Laboratories) approved for outdoor use. Extension cords shall be in good condition without splices, deterioration or damage.

Closure of the Christmas Tree Lot.

806.1.4.11 On January 5th, following the permit period, all cut, natural Christmas trees, combustible materials, tents, trailers, temporary buildings and structures associated with the Christmas tree lot shall be removed and the location shall be cleaned to the reasonable satisfaction of the Chief."

"§ 15.20.240 SECTION ~~2206.2.3~~ 2306.2.3 AMENDED CHAPTER 22, SECTION ~~2206.2.3.1~~ AND ~~2206.2.3.2~~ ADDED - PROTECTED ABOVEGROUND TANKS.

Section ~~2206.2.3~~ 2306.2.3 is hereby amended to read as follows:

~~2206.2.3~~ 2306.2.3 Protected aboveground tanks. The storage and dispensing of Class I, II, or IIIA liquid motor fuels into the fuel tank of a motor vehicle from protected aboveground tanks located outside buildings shall be limited to fleet vehicle motor fuel-dispensing facilities except as approved by the chief on a site specific basis."

"§ 15.20.250 SECTION ~~3304.1~~ 5601.1 AMENDED - LOCATIONS WHERE STORAGE OF EXPLOSIVES AND BLASTING AGENTS ARE PROHIBITED.

Section ~~3304.1~~ 5601.1 of the Fire Code is hereby amended to read as follows:

Storage of explosives and blasting agents is prohibited in all zones within the city, except "manufacturing" zones as established by ordinance in the official land use plan for the City as the same now exists or is hereafter amended."

"§ 15.20.260 CHAPTER 33 56, SECTION ~~3309~~ 5609 ADDED - SEIZURE OF FIREWORKS.

Section ~~3309~~ 5609 is hereby added to read in its entirety as follows:

~~3309 5609~~ Seizure of Fireworks. All fireworks shall be illegal in the City of Monrovia including California State Fire Marshal Safe and Sane. The fire code official shall have the authority to seize, take and remove fireworks and/or safe and sane fireworks stored, sold, offered for sale, used or handled in violation of the provisions of Title 19 CCR, Chapter 6 and Health and Safety Code, Chapter 9.

EXCEPTION: When permits are issued for such use."

"§ 15.20.270 SECTION ~~3404.2.9.5.4~~ 5704.2.9.6.1 AMENDED - ESTABLISHMENT OF LOCATIONS IN WHICH ABOVEGROUND STORAGE OF FLAMMABLE LIQUIDS AND BULK PLANTS AND TERMINALS MAY BE PERMITTED.

Section ~~3404.2.9.5.4~~ 5704.2.9.6.1 of the Fire Code is hereby amended as follows:

Locations where above ground tanks are prohibited. Storage of Class I and Class II liquids in aboveground tanks outside of buildings shall be permitted only on land zoned "manufacturing" as established by ordinance in the official land use plan for the City, as the same now exists or is hereafter amended, subject to the approval of the Fire Chief."

"§ 15.20.280 SECTION ~~3406.4~~ 5706.4 AMENDED - BULK PLANTS OR TERMINALS.

Section ~~3406.4~~ 5706.4 of the Fire Code is hereby amended by adding a paragraph to read as follows:

Bulk plants and terminals shall be permitted only on land zoned "manufacturing" as established by ordinance in the official land use plan for the City, as the same now exists or is hereafter amended, subject to approval of the Fire Chief."

"§ 15.20.290 SECTION ~~3804.2~~ 6104.2 AMENDED - ESTABLISHMENT OF LOCATIONS IN WHICH STORAGE OF LIQUEFIED PETROLEUM GASES MAY BE PERMITTED.

Section ~~3804.2~~ 6104.2 of the Fire Code is hereby amended by adding a paragraph to read as follows: The storage of liquefied petroleum gases shall be permitted only on land zoned "manufacturing" as established by ordinance in the official land use plan for the City, as the same now exists or is hereafter amended, subject to the approval of the Fire Chief.

EXCEPTION: Individual containers with a 500-gallon (1893 L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 500-gallons (1893 L), used exclusively for emergency power generation serving Group R-3 occupancies or other Other locations as specifically approved by the Fire Chief."

"§ 15.20.295 SECTION 6112 ADDED – USE OF LP-GAS FOR EMERGENCY POWER GENERATION IN GROUP R-3 OCCUPANCIES IN THE WILDLAND-URBAN INTERFACE AREA.

Section 6112 is hereby added to the Fire Code to read as follows: The use of liquefied petroleum gas for emergency power generation for Group R-3 occupancies located in the Wildland-Urban Interface area shall comply with the following:

1. All individual containers shall be a maximum size of 500-gallon (1893 L) water capacity. Multiple container systems shall not exceed 500-gallons (1893 L) in aggregate quantity.
2. A minimum 10 foot setback shall be maintained between the tank and all buildings in perpetuity. All future developments on the property shall be subject to this requirement.

- 3. Signage shall be provided on the tank indicating its contents and also warning of "NO SMOKING WITHIN 25 FEET".
- 4. Weeds, grass, brush, trash, and other combustible materials shall be kept a minimum of 10 feet from the tank.
- 5. A minimum 6A:80BC fire extinguisher shall be provided within 50 feet of the tank. It shall be the applicant's responsibility to have the fire extinguisher serviced by a qualified contractor on an annual basis.
- 6. During refueling, the LP tank vehicle shall not be left unattended at any time."

"§ 15.20.300 SECTION 313.3 ADDED - RESPONSIBILITY FOR FIRE.

Section 313.3 is hereby added to the Fire Code to read as follows:

Any person utilizing an internal combustion engine on any grass-covered or brush-covered land shall be responsible for any emergency and response costs as a result of such use, if the costs resulted from the person's intentional or careless acts, or if the costs were caused by a defective or deficient spark arrester. If the person is a juvenile, such person's parent or guardian shall be responsible for the costs."

"§ 15.20.310 SECTION 4907 AMENDED - DEFENSIBLE SPACE.

Section 4907 of the Fire Code is hereby amended to read as follows:

4907.1 Objective. Provisions of this section are intended to modify the fuel load in areas adjacent to structures to create a defensible space within the hazardous fire zone.

4907.2 Fuel modification. Fuel modification shall be provided within a distance from buildings or structures as specified in Table 49-1. Distances specified in Table 49-1 shall be measured along the grade from the perimeter or projection of the building or structure. Persons owning, leasing, controlling, operating, or maintaining buildings or structures requiring defensible spaces are responsible for modifying or removing non fire-resistive vegetation. Ornamental vegetative fuel or cultivated ground cover, such as green grass, ivy, succulents or similar plants used as ground cover, are allowed to be within the designated defensible space provided they do not form a means of readily transmitting fire from the native growth to any structure.

Trees are allowed within the defensible space provided that the distances between crowns and crowns from adjacent trees, structures or unmodified fuel is not less than 15 feet (4572 mm). Trees shall be maintained free of dead wood and litter.

4907.3 Fences. Fences within 10 feet (3050 mm) of a structure and requiring a permit in accordance with the Building Code shall be constructed of noncombustible materials where ~~located within the defensible space.~~

**TABLE 49-1
REQUIRED DEFENSIBLE SPACE**

<i>Wildland-Urban Interface Area</i>	<i>Fuel Modification Distance (feet)</i>
Moderate hazard	30
High hazard	100
Extreme or very high hazard	200

The hazard rating shall be determined in accordance with N.F.P.A. 299 or legislative action.
For SI: 1 foot = 305 mm

4907.4 Adjacent landowners. Persons owning, leasing, controlling, operating, or maintaining land within the defensible space surrounding buildings or structures as described in Table 49-1 shall modify or remove non-fire resistive vegetation from their land as necessary to provide the required fuel modification. Such persons may satisfy the requirements of this section by permitting access to their property to persons owning, leasing, controlling, operating or maintaining the neighboring property that is improved with buildings or structures for the purpose of modifying or removing non-fire resistive vegetation to provide the appropriate fuel modification. If such access is provided, persons owning, leasing, controlling, operating or maintaining the neighboring property that is improved with buildings or structures shall bear the duty to comply with the requirements of this section."

"§ 15.20.320 SECTION 4914 4908 ADDED - ACCESS.

Section 4914 4908 is hereby added to the Fire Code to read as follows:

SECTION 4914 4908 ACCESS

4914.4 4908.1 Objective. The objective of this Section is to establish the minimum requirements for emergency vehicle access for buildings and structures located in the wildland-urban interface areas

4914.2 4908.2 Subdivision Access. New subdivisions, as determined by this jurisdiction, shall be provided with fire apparatus access roads in accordance with the Fire Code and N.F.P.A. 299 and access requirements in accordance with Section 4914 4908.

4914.2.1 4908.2.1 Individual Structure Access. Individual structures hereafter constructed or moved into or within wildland-urban interface areas shall be provided with fire apparatus access in accordance with the Fire Code and N.F.P.A. 299 and driveways in accordance with Section 4914.4 4908.4. Marking of fire-protection equipment shall be provided in accordance with Section 4914.6 4908.6 and address markers shall be provided in accordance with Section 4914.7 4908.7.

4914.2.2 4908.2.2 Existing Conditions. Existing buildings and structures shall be provided with address markers in accordance with Section 4914.7 4908.7. Existing roads and fire protection equipment shall be provided with markings in accordance with Sections 4914.5 4908.5 and 4914.6 4908.6.

4914.3 4908.3 Restricted Access. Where emergency vehicle access is restricted due to secured access roads or driveways or where immediate access is necessary for life saving or fire fighting purposes, the code official is authorized to require a key box to be installed in an accessible location. The key box shall be of a type approved by the code official and shall contain keys to gain necessary access as required by the code official.

4914.4 4908.4 Driveways. Driveways shall be provided when access is not available at least within 150 feet (45720mm) from any portion of an exterior wall on grade. Driveways shall provide a minimum unobstructed width of 12 feet (3658 mm) and a minimum unobstructed height of 13 feet 6 inches (4115 mm). Driveways in excess of 150 feet (45720 mm) in length shall be provided with turnarounds. Driveways in excess of 200 feet (60960 mm) in length shall be provided with turnouts in addition to turnarounds. Driveway lengths shall not exceed one-half

the approved maximum access road length. Vehicle load limits shall be posted at both entrances to bridges on driveways. ~~See the Fire Code for additional bridge requirements.~~ Bridges shall also comply with CFC 503.2.6. Driveway turnarounds shall ~~have~~ have an inside turning radii radius of not less than ~~30 feet (9144 mm)~~ 28-feet (8540 mm) and outside turning radii radius of not less than ~~45 feet (13716 mm)~~ 48-feet (14640 mm). Driveways which connect with a road or roads at more than one point may be considered as having a turnaround if all changes of direction meet the radii requirements for driveway turnarounds. Driveway turnouts shall be an all-weather road surface at least 10 feet (3048 mm) wide and 30 feet (9144mm) long. Driveway turnouts shall be located as required by the code official. A driveway shall be defined as vehicular ingress and egress routes that serve no more than two (2) buildings or structures, not including accessory structures, on one parcel, containing no more than three (3) dwelling units.

EXCEPTIONS: When topography prevents appropriate fire apparatus access the Fire Chief may consider additional fire protection systems, build-in fire resistive construction or supplementary brush abatement measures, or all of the above, in lieu of the minimum standards established. The Fire Chief or his/her designee shall have discretion on acceptable requirements which shall not be subject to planning commission review.

~~4914.5~~ 4908.5 **Marking of Roads.** Approved signs or other approved notices shall be provided and maintained for access roads and driveways to identify such roads and prohibit the obstruction thereof or both. All road identifications signs shall have minimum 4-inch high (102 mm) letters with 1-1/2 inch (13 mm) stroke on a contrasting 6-inch high (153 mm) sign. Road identification signage shall be mounted at a height of 7 feet (2134 mm) from the road surface to the bottom of the sign.

~~4914.6~~ 4908.6 **Marking of Fire Protection Equipment.** Fire protection equipment and fire hydrants shall be clearly identified in a manner approved by the code official to prevent obstruction.

~~4914.7~~ 4908.7 **Address Markers.** All buildings shall have a permanently posted address, which shall be placed at each driveway entrance and visible from both directions of travel along the road. In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter, and the address shall be visible and legible from the road on which the address is located. Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction. Where multiple addresses are required at a single driveway, they shall be mounted on a single post. Where a roadway provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest road intersection providing access to that site.

§ 15.20.330 SECTION 104.11 AMENDED - AUTHORITY AT FIRES AND OTHER EMERGENCIES.

Section 104.11 is amended to read as follows:

Authority at Fire and Other Emergencies

104.11. General. The Chief or officer of the fire department in charge at the scene of a fire or other emergency, including such fires and emergencies at industrial facilities where a private fire brigade or a private fire department is established, involving the protection of life or property or any part thereof, shall have the authority to direct such operations as necessary to extinguish or control any fire, perform any rescue operations, investigate the existence of suspected or reported fires, gas leaks or other hazardous conditions or situations or of taking any action necessary in the reasonable performance of duty. Command and control of the emergency shall be the responsibility of the Monrovia Fire Department, with cooperation and technical or

professional input provided by appropriate private sector employees and/or management. In the exercise of such power, the chief is authorized to prohibit any person, vehicle, vessel, or thing from approaching the scene and is authorized to remove or cause to be removed or kept away from the scene any vehicle, vessel or thing which could impede or interfere with the operations of the fire department and, in the judgment of the chief, any person not actually and usefully employed in the extinguishing of such fire or in the preservation of property in the vicinity thereof."

"§ 15.20.335 SECTION 104.11.4 ADDED - FINANCIAL RESPONSIBILITY.

104.11.4 Financial Responsibility. Any person who personally, or through another, willfully, negligently, or in violation of law, sets a fire, allows a fire to be set, or allows a fire kindled or attended by him/her to escape from his/her control, allows any hazardous material to be handled, stored, disposed, of, or transported in a manner not in accordance with this Code, State law or nationally recognized Standards, allows any hazardous materials to escape from his/her control, allows continuation of a violation of this Code is liable for the expense of fighting the fire including fire investigation or for the expenses incurred during a hazardous materials incident, and such expense will be charged against that person."

"§ 15.20.340 APPENDIX D AMENDED - FIRE APPARATUS ACCESS ROADS.

Appendix D-- Fire Apparatus Access Roads is amended and added to read in its entirety as follows:

Appendix D

Fire Apparatus Access Roads

(See CFC Section 503.2.1)

§ D101—GENERAL

D101.1 Scope. The provisions of Chapter 5, Section ~~503.2.1~~ 503, apply unless specially modified by this appendix. This appendix is intended to provide guidelines to be considered by the chief when determining fire department access for commercial and residential developments when onsite access is required. Approved alternatives for fire department access include the needs of the local fire department and the following sections.

§ D104—Minimum Specifications

D104.3.4 Multiple Access Provisions. The chief is authorized to require two or more means of access in accordance with Section 503.1.2

D103.5.1 Access-control Devices. When required fire department access is restricted by the installation of access-control devices, such devices shall be approved by the chief, provide adequate clear width for fire department apparatus and be maintained operable at all times.

D103.6 Signs. When motor vehicle parking is allowed on access roadways, such parking shall not encroach into the fire department access roadway. When this provision is compromised or restricted, the chief is authorized to require signage to indicate parking restriction in accordance with Section 503.3.

~~D102.1 Access and loading.~~ D103.7 Widths. Access roadways or streets shall comply with the provisions of Chapter 5, Section 503.2.1. Fire department access shall have an unobstructed width of not less than ~~25~~ 20 feet. Road widths shall be as approved by the chief, or as follows:
(1) ~~25~~ 20 feet wide when parking is not allowed on either side of the roadway,
(2) ~~28~~ 26 feet wide when parking is not allowed on only one side of the roadway, and

(3) 34 32 feet wide when parking is not restricted.

~~D105.1 Aerial ladder access. When the height of a structure at the roof eaves exceeds 27 feet or the capability of the fire department to access the roof safely utilizing ground ladders, the location and width of access roadways shall be such that truck-mounted aerial ladders may be utilized. Aerial ladder access shall include the ability to maneuver apparatus, deploy outriggers and provide proper climbing angles. The minimum road width shall not be less than 30 feet, or as approved by the chief.~~

~~D103.4 Dead ends. Dead end fire department access road shall be in accordance with Menrovia Fire Department Operations Manual "Fire Lanes". For the purpose of the apparatus maneuvering, the use of bulb or cul-de-sacs, hammerheads, "Y" heads, or other methods shall be subject to the capabilities of the fire apparatus, as required by the chief.~~

~~D103.4.1 Cul-de-sacs. Cul-de-sacs shall be maintained clear and unobstructed, allowing a turning radius that is consistent with the capabilities of the fire apparatus of the fire department, subject to the approval by the chief.~~

~~EXCEPTIONS: When alternate methods and means relating turning around of fire apparatus are provided, the provisions of this section may be modified by the chief.~~

~~D103.2 Grades. Fire apparatus roads shall not exceed 10 percent in grade.~~

~~EXCEPTIONS:~~

~~1. The chief is authorized to allow increased steepness of grade, depending on the apparatus requirements of the fire department, when every building in the residential development is provided with an approved automatic fire sprinkler system.~~

~~2. The chief may allow an increase of the maximum grade when other approved fire protection measures are provided.~~

~~D103.6.3 D103.2.1 Angles of Approach and Departure. The angles of approach and departure for any means of access shall not exceed the design limitations of the fire apparatus of the fire department, or 8 percent, whichever is greater.~~

~~D102.2 Surface. Fire apparatus access roads shall be designed and maintained to ensure that all-weather driving capabilities are maintained in accordance with CFC Section 503.2.3. When required by the chief, proposed alternate design criteria for an "all-weather surface" fire department access road or street, bearing the stamp of a professional engineer shall be provided.~~

~~D103.6.4 Drainage. When subject to run-off damage, the chief is authorized to require approved drainage."~~

~~§ 15.20.350 SECTION 504.4 ADDED — PHOTOVOLTAIC SYSTEMS INSTALLATION REQUIREMENTS. RESERVED~~

~~Section 504.4 is hereby added to the Fire Code to read as follows:~~

~~504.4 Photovoltaic system installation requirements.~~

~~504.4.1 Signage. Approved signage shall be provided at the following locations:~~

~~1. Direct Current Conduit, Raceways, Enclosures, Cable Assemblies, and Junction Boxes~~

~~a. Marking should be placed on all interior and exterior DC conduit, raceways, enclosures, and cable assemblies, every 10 feet, at turns and above and/or below penetrations and at all DC combiner and junction boxes.~~

~~b. Marking should read — "CAUTION: SOLAR CIRCUIT"~~

~~2. DC Disconnect~~

~~a. Signage should read "PV SYSTEM DC DISCONNECT"~~

~~3. INVERTER:~~

~~a. Signage should read "PV SYSTEM INVERTER WARNING: ELECTRICAL SHOCK HAZARD"~~

~~4. AC DISCONNECT:~~

~~a. Signage should read "PV SYSTEM AC DISCONNECT"~~

~~5. Permanent directory or plaque providing location of service disconnecting means and photovoltaic system disconnecting means, if not located at the same location.~~

~~504.4.2 Emergency access pathways. Emergency access pathways shall be provided for photovoltaic system installations as follows:~~

~~1. Residential Systems:~~

~~EXCEPTIONS: Photovoltaic systems on detached garages and/or pool houses.~~

~~a. Residential Buildings with hip roof layouts: Modules should be located in a manner that provides 3' wide clear access pathway from the eave to the ridge on each roof slope where modules are located. The access pathway should be located at a structurally strong location on the building (such as a bearing wall).~~

~~b. Residential Buildings with a single ridge: Modules should be located in a manner that provides 3' wide access pathways from the eave to the ridge on each roof slope where modules are located.~~

~~c. Hips and valleys: Modules should be located no closer than 1.5' to a hip or a valley if modules are to be placed on both sides of a hip or valley. If the modules are to be located on only one side of a hip or valley that is of equal length then the modules may be placed directly adjacent to the hip or valley.~~

~~d. The modules should be located no higher than 3' below the ridge.~~

~~2. Commercial Systems:~~

~~a. Should be over structural members.~~

~~b. Centerline axis pathways should be provided in both axes of the roof. Centerline axis pathways should run on structural members or over the next closest structural member nearest to the center lines of the roof.~~

~~c. Should be straight line not less than 4' clear to skylights and/or ventilation hatches.~~

~~d. Should be straight line not less than 3' clear to roof standpipes.~~

~~e. Should provide not less than 3' clear around roof access hatch with a single minimum 4' clear pathway to parapet or roof edge.~~

~~f. Arrays should be no greater than 150 feet by 150 feet in size measured in either axis.~~

~~g. Pathway width options between array sections should be either:~~

~~1) 8' or greater in width.~~

~~2) 4' or greater in width and bordering on existing roof skylights or ventilation hatches.~~

~~3) 4' or greater in width and bordering 4' x 8' "venting cutouts" every 20' on alternating sides of the pathway.~~

~~3. Ground Mounted Arrays:~~

~~a. A clear brush area of 10' is required for ground mounted photovoltaic arrays.~~

~~RATIONALE: Creates access and signage requirements for all new photovoltaic system installations.~~

~~FINDINGS: Local climatic conditions — The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires can spread to structures via inadequately protected attics which will require fire suppression activities to commence on rooftops. Access and signage requirements for photovoltaic systems will ensure firefighter safety and aid rapid response to fires. RESERVED"~~

"§ 15.20.360 SECTION 540.3 1103.2 AMENDED—EMERGENCY RESPONDER RADIO COVERAGE IN EXISTING BUILDINGS.

Section 540.3 1103.2 of the California Fire Code is amended to read as follows:

540.3 1103.2 Emergency responder radio coverage in existing buildings. Existing buildings that do not have approved radio coverage for emergency responders within the building shall be equipped with such coverage according to one of the following:

1. Wherever an existing wired communication system cannot be repaired or is being replaced, or where not approved in accordance with Section 510.1, Exception 1.
2. Whenever total additions result in an increase of more than 5000 square feet in the total floor area, including mezzanines or additional stories, regardless of ownership. Additions shall be cumulative with each application for building permit from January 1, 2011."

"§ 15.20.370 VIOLATIONS—APPENDIX K AMENDED - PERMITS

~~Any person, firm, entity, or corporation violating any of the Fire Code or failing to comply with any of the mandatory requirements of the Fire Code shall be guilty of a misdemeanor and upon conviction thereof shall be punished as provided in Section 1.16.010 of this Code. Each such violator shall be guilty of a separate offense for each and every day during any portion of which any violation of any provision of the Fire Code, or any failure to comply with a mandatory requirement of the Fire Code, is committed, continued or permitted to continue by any such violator, and he or she shall be punished accordingly.~~

APPENDIX K SECTION K101.2 AMENDED - PERMITS.

Section K101.2 of the California Fire Code is amended to read as follows:

K101.2 Permits. An operational permit shall be required for haunted houses, ghost walks, or similar amusement uses in accordance with Appendix K101.2.

EXCEPTION: Haunted houses, ghost walks, or similar amusement uses in Group R-3 occupancies."

"§ 15.20.380 RESPONSIBILITY. VIOLATIONS

~~The expense of each response or any action by the Monrovia Fire Department which is the result of a violation of the Fire Code, or any damage caused by malicious mischief, or any action determined to be intentional or negligent requiring any response, assistance, or corrective or preventative action conducted by Fire Department personnel, shall be a charge against the responsible person whose violation or action caused the Fire Department response or action. The expense of such response or action shall constitute a debt of such person and the Fire Chief shall keep an itemized account of said expenses. The Fire Department shall give notice of said expenses to such persons and a hearing as to the validity and amount of such charge shall be conducted before an impartial Hearing Officer within 30 days, if requested in writing within ten days of the date of such notice. The Hearing Officer's determination shall be final. The city may take such actions as are reasonable and necessary to recover such expenses from any and all responsible persons.~~

VIOLATIONS. Any violation of any provision of this Chapter or any Code adopted herein by reference shall constitute a misdemeanor and shall be punishable by a fine not to exceed one thousand dollars (\$1,000) or by imprisonment for a period not to exceed six (6) months, or by both such fine and imprisonment, unless prosecuted as an infraction by the City Prosecutor.

Each and every day such a violation exists shall constitute a separate and distinct violation of this Ordinance."

"§ 15.20.390 RESPONSIBILITY.

The expense of each response or any action by the Monrovia Fire Department which is the result of a violation of the Fire Code, or any damage caused by malicious mischief, or any action determined to be intentional or negligent requiring any response, assistance, or corrective or preventative action conducted by Fire Department personnel, shall be a charge against the responsible person whose violation or action caused the Fire Department response or action. The expense of such response or action shall constitute a debt of such person and the Fire Chief shall keep an itemized account of said expenses. The Fire Department shall give notice of said expenses to such persons and a hearing as to the validity and amount of such charge shall be conducted before an impartial Hearing Officer within 30 days, if requested in writing within ten days of the date of such notice. The Hearing Officer's determination shall be final. The city may take such actions as are reasonable and necessary to recover such expenses from any and all responsible persons."

SECTION 3. The City Council hereby finds that each and all of the foregoing modifications to the Uniform Codes adopted by reference in this Ordinance are reasonably necessary to protect the health, safety, and general welfare of the residents of the City of Monrovia due to the local climatic, geological and topographical conditions identified as to each modification in Exhibit A, attached to this Ordinance and adopted herein by this reference. Exhibit A shall not be codified, but shall remain a part of the permanent records of the City along with this Ordinance.

SECTION 4. All inconsistencies between this Ordinance and the various Codes adopted in this Ordinance are changes, modifications, amendments, additions or deletions thereto authorized by California Health and Safety Sections 17958.5 and 17958.7.

SECTION 5. To the extent the provisions of this Ordinance are substantially the same as previous provisions of the Monrovia Municipal Code, these provisions shall be construed as continuations of those provisions and not as new enactments. Nothing in this Ordinance shall waive or excuse any violation of law existing as of the date this Ordinance is adopted.

SECTION 6. If any section, subsection, subdivision, paragraph, sentence, clause or phrase of this Ordinance or any part hereof or exhibit hereto is for any reason held to be invalid, such invalidity shall not affect the validity of the remaining portions of this Ordinance or any part thereof or exhibit thereto. The City Council of the City of Monrovia hereby declares that it would have passed each section, subsection, subdivision, paragraph, sentence, clause or phrase hereof, irrespective of the fact that any one or more sections, subsections, subdivisions, paragraphs, sentences, clauses or phrases be declared invalid.

SECTION 7. The City Clerk shall certify to the adoption of this Ordinance, post and/or publish according to applicable law, and shall transmit a certified copy of this Ordinance to the California Building Standards Commission forthwith.

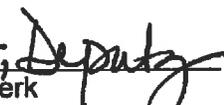
INTRODUCED this 5th day of November, 2013.

PASSED, APPROVED, AND ADOPTED this 3rd day of December, 2013.



Mary Ann Lutz, Mayor
City of Monrovia

ATTEST:


for 

Alice D. Atkins, CMC, City Clerk
City of Monrovia

APPROVED AS TO FORM:



Craig A. Steele, City Attorney
City of Monrovia

ORDINANCE 2013-05
EXHIBIT A

STATEMENTS OF RATIONALE AND FINDINGS

NOTE: The text or recommended code amendments is repeated here for administrative convenience only. The text adopted as a part of the main ordinance controls over this any inconsistency in this document.

PART I

RECOMMENDED AMENDMENTS TO THE 2013 EDITION OF THE CALIFORNIA
BUILDING CODE

§ 15.04.225 SECTION 701A.1 AMENDED-SCOPE.

Section 701A.1 is amended to read as follows:

701A.1 Scope. This chapter applies to building materials, systems and/or assemblies used in the exterior design and construction of new buildings and additions to existing buildings located within the Wildland-Urban Interface Fire Area.

RATIONALE: Text incorporates existing buildings into the construction requirements for the WUI Chapter 7A.

FINDINGS: Local climatic, geographic, and topographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. Incorporating WUI construction standards for existing construction protects the home itself and its adjacent properties as well.

The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, an increased protection level of construction is necessary in the high-hazard WUI area.

The water supply (domestic and fire flow) system within the City is directly affected by the topographical layout of Monrovia. The distribution system consists of high-low pressure and gravity systems zones, which carry the water from various reservoirs and storage tanks to different zones via water pipes. These street mains consist of high-pressure lines and low pressure lines where the pressure and flows are adequate in most of the areas of the city. This variation of pressure causes major problems to development, as well as fire suppression forces. Because of this, an increased level of construction is necessary in the high-hazard WUI area.

§ 15.04.230 SECTION 701A.3 AMENDED-APPLICATION.

Section 701A.3 is amended to read as follows:

701A.3 Application. New buildings located in the Wildland-Urban Interface Area shall comply with the provisions of this chapter.

Exception: Buildings of an accessory character classified as Group U occupancy of any size located at least 50 feet from a Group R-3 structure.

Additions to existing buildings and/or construction of the existing structure located in the Wildland-Urban Interface Area shall comply with the provisions of this chapter.

Exception: Additions made during the previous 60 months to the existing structure less than 10 percent of the original area.

The construction requirements of the existing structure located in the Wildland-Urban Interface Area is based on the following:

1. **Over 10% but less than 50% addition.** The construction of the existing structure or building being added to may be left in place providing the cumulative area of additions made during the previous 60 months to the existing structure is over 10 percent but less than 50 percent of the original area.
2. **50% or more addition.** The construction of the existing structure or building being added to shall be made to comply with the provisions of this chapter when the cumulative area of additions made during the previous 60 months to the existing structure is 50 percent or more of the original area.

RATIONALE: Text specifies types of new structures and thresholds for existing structures which shall comply with the construction standards of Chapter 7A.

FINDINGS: Local climatic, geographic, and topographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. Incorporating WUI construction standards for existing construction protects the home itself and its adjacent properties as well.

The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, an increased protection level of construction is necessary in the high-hazard WUI area.

The water supply (domestic and fire flow) system within the City is directly affected by the topographical layout of Monrovia. The distribution system consists of high-low pressure and gravity systems zones, which carry the water from various reservoirs and storage tanks to different zones via water pipes. These street mains consist of high-pressure lines and low pressure lines where the pressure and flows are adequate in most of the areas of the city. This variation of pressure causes major problems to development, as well as fire suppression forces. Because of this, an increased level of construction is necessary in the high-hazard WUI area.

§ 15.04.240 CHAPTER 9 AMENDED – FIRE EXTINGUISHING SYSTEMS, SECTION 903.2 AMENDED - AUTOMATIC SPRINKLER SYSTEMS.

Section 903.2 of the Building Code is hereby amended to read as follows:

1. In all new buildings regardless of the type of construction or occupancy.

Exceptions:

- A) Detached Group U occupancies, providing the floor area does not exceed 1000 square feet.
- B) Other minor buildings and/or occupancies as approved by the Fire Chief.

2. In existing buildings with new occupancies as required by other sections of the Fire Code.

RATIONALE: Text allows small detached garages/workshops with low fire load and no life safety issues to be non-sprinklered.

FINDINGS: Local climatic and geographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, and due to some older nonconforming buildings, it is necessary during the new construction or building renovation to use the City ordinance to control and minimize conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion.

Section 1507.1 of the Building Code is amended to read as follows:

~~(A) The first paragraph of Section 1507.1 is revised by adding a new second sentence to read as follows: No wood roof covering or roof covering material containing wood or wood products, whether treated or untreated, may be installed.~~

~~**EXCEPTION:** Additions to Group R, Division 3 Occupancies which have existing wood roof coverings may be covered with matching materials, provided the new material qualifies as a Class A or B roof covering.~~

~~(B) Solar panels of photovoltaic systems installed on roofs of structures located in the Wildland Urban Interface Area shall be rated Class A.~~

EXCEPTIONS:

- ~~1. Photovoltaic systems covering less than 10% of the entire roof area of the structure.~~
- ~~2. Photovoltaic systems installed on structures of an accessory character classified as a Group U occupancy located at least 50 feet from a Group R-3 structure.~~

~~(C) Subsections 1505.5 is deleted entirely.~~

~~(D) Table 15 amended by referencing a new Footnote 1 at the table title with said footnote to read as follows:~~

- ~~1. No wood roof covering or roof covering material containing wood or wood products, whether treated or untreated, may be installed. See Section 1507.1 for exception.~~

~~**1507.3.1 Deck requirements.** Concrete and clay tile shall be installed only over solid sheathing or spaced structural sheathing boards.~~

TABLE 1507.3.7

~~CLAY AND CONCRETE TILE ATTACHMENT ^{a, b, c}~~

GENERAL - CLAY OR CONCRETE ROOF TILE			
Maximum basic wind speed (mph)	Mean roof height (feet)	Roof slope up to <3:12	Roof slope 3:12 and over
85	0-60	Minimum slope: 2.5:12 Two fasteners per tile.	Two fasteners per tile.
100	0-40		
100	> 40-60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails. The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.	

110	0-60	The fastening system shall resist the wind forces in Section 1609.5.2.		
120	0-60	The fastening system shall resist the wind forces in Section 1609.5.2.		
130	0-60	The fastening system shall resist the wind forces in Section 1609.5.2.		
All	>60	The fastening system shall resist the wind forces in Section 1609.5.2.		
INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS^a (Installations on solid sheathing with battens)				
Maximum basic wind speed (mph)	Mean roof height (feet)	Roof slope up to <5:12	Roof slope 5:12<12:12	Roof slope 12:12 and over
85	0-60	Minimum slope is 4:12	One fastener per tile. Tiles with installed weight less than 9 lbs/sq. ft. require a minimum of one fastener per tile.	One fastener required for every tile. Tiles with installed weight less than 9 lbs./sq. ft. require a minimum of one fastener per tile.
100	>40-60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails. The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.		
110	0-60	The fastening system shall resist the wind forces in Section 1609.5.2.		

TABLE 1507.3.7

CLAY AND CONCRETE TILE ATTACHMENT (Cont'd)

INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS (Installations on solid sheathing without battens)		
Maximum basic wind speed (mph)	Mean roof height (feet)	Minimum All roof slopes 4 units vertical in 12 units horizontal Maximum slope 7 units vertical in 12 units horizontal
120	0-60	The fastening system shall resist the wind forces in Section 1609.5.2.
130	0-60	The fastening system shall resist the wind forces in Section 1609.5.2.
All	>60	The fastening system shall resist the wind forces in Section 1609.5.2.
85	0-60	One fastener per tile.
100	0-40	One fastener per tile.
100	>40-60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails. The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.
110	0-60	The fastening system shall resist the wind forces in Section 1609.5.2.
120	0-60	The fastening system shall resist the wind forces in Section 1609.5.2.
130	0-60	The fastening system shall resist the wind forces in Section 1609.5.2.
All	>60	The fastening system shall resist the wind forces in Section 1609.5.2.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 4.882 kg/m².

a. Minimum fastener size. Hot-dipped galvanized ring shank or other corrosion-resistant nails not less than No. 11 gage with 5/16-inch head. Fasteners shall be long enough to penetrate into the sheathing 0.75-inch or through the thickness of the sheathing, whichever is less. Attaching wire for clay and concrete tile shall not be smaller than 0.083-inch and shall be copper, brass or stainless steel.

- b. ~~Snow areas. A minimum of two fasteners per tile are required or battens and one fastener.~~
- c. ~~Roof slopes greater than 24:12. The nose of all tiles shall be securely fastened.~~
- d. ~~Horizontal battens. Battens shall be not less than 1 inch by 2 inch nominal. Provisions shall be made for drainage by a minimum of 1/8 inch riser at each nail or by 4 foot long battens with at least a 0.5 inch separation between battens. Horizontal battens are required for slopes over 7:12.~~
- e. ~~Perimeter fastening areas include three tile courses but not less than 36 inches from either side of hips or ridges and edges of eaves and gable rakes.~~

~~RATIONALE: Requires all new rooftop photovoltaic systems in the WUI to comply with Class A standards, with some exceptions.~~

~~FINDINGS: Local climatic conditions—The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. Requiring Class A solar panels on rooftops protects the home itself and its adjacent properties as well.~~

§ 15.04.245 SECTION 903.2.18 AMENDED—GROUP U PRIVATE GARAGES AND CARPORTS ACCESSORY TO GROUP R-3 OCCUPANCIES.

Section 903.2.18 of the Building Code is hereby amended to read as follows:

Carports with habitable space above, detached private garages over 1000 square feet in area, and attached private garages shall be protected by fire sprinklers in accordance with this section. These areas shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used.

§ 15.04.250 RESERVED. SECTION 903.3.1.2 AMENDED - NFPA 13R SPRINKLER SYSTEM.

Section 903.3.1.2 of the Building Code is hereby amended to read as follows:

Where allowed in buildings of Group R, up to and including buildings four stories in height, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13R with the following additions:

- (a) Attics shall be fully sprinklered with quick-response intermediate temperature heads.
- (b) Private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area.

§ 15.04.255 SECTION 903.3.1.3 AMENDED - NFPA 13D SPRINKLER SYSTEM.

Section 903.3.1.3 of the Building Code is hereby amended to read as follows:

Where allowed in buildings of Group R, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13D with the following additions:

- (a) Attics containing forced air units shall have one or more quick-response intermediate temperature sprinkler heads adjacent to each unit.
- (b) Private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area.
- (c) Attics and basements used for storage purposes shall be fully sprinklered with residential type heads.
- (d) A single exterior bell activated by the waterflow switch shall be provided at an approved location.

§ 15.04.260 RESERVED. Section 1507.1 of the Building Code is amended to read as follows:

(A) The first paragraph of Section 1507.1 is revised by adding a new second sentence to read as follows:

No wood roof covering or roof covering material containing wood or wood products, whether treated or untreated, may be installed.

Exception: Additions to Group R, Division 3 Occupancies which have existing wood roof coverings may be covered with matching materials, provided the new material qualifies as a Class A or B roof covering.

~~(B) Solar panels of photovoltaic systems installed on roofs of structures located in the Wildland-Urban Interface Area shall be rated Class A.~~

EXCEPTIONS:

- ~~1. Photovoltaic systems covering less than 10% of the entire roof area of the structure.~~
- ~~2. Photovoltaic systems installed on structures of an accessory character classified as a Group U occupancy located at least 50 feet from a Group R-3 structure.~~

(C) ~~(B)~~ Subsections 1505.5 is deleted entirety.

~~(D)~~ ~~(C)~~ Table 15 amended by referencing a new Footnote 1 at the table title with said footnote to read as follows:

1. No wood roof covering or roof covering material containing wood or wood products, whether treated or untreated, may be installed. See Section 1507.1 for exception.

1507.3.1 Deck requirements. Concrete and clay tile shall be installed only over solid sheathing or spaced structural sheathing boards.

TABLE 1507.3.7
CLAY AND CONCRETE TILE ATTACHMENT ^{a, b, c}

GENERAL - CLAY OR CONCRETE ROOF TILE				
<i>Maximum basic wind speed (mph)</i>	<i>Mean roof height (feet)</i>	<i>Roof slope up to <3:12</i>	<i>Roof slope 3:12 and over</i>	
85	0 - 60	Minimum slope: 2.5:12 Two fasteners per tile.	Two fasteners per tile.	
100	0 - 40			
100	> 40 - 60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails. The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.		
110	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.		
120	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.		
130	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.		
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.2.		
INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS ^{d, e} (Installations on solid sheathing with battens)				
<i>Maximum basic wind</i>	<i>Mean roof</i>	<i>Roof slope up to</i>	<i>Roof slope 5:12<12:12</i>	<i>Roof slope 12:12 and over</i>

speed (mph)	height (feet)	<5:12		
85	0 - 60	Minimum slope is 4:12	One fastener per tile. Tiles with installed weight less than 9 lbs/sq. ft. require a minimum of one fastener per tile	One fastener required for every tile. Tiles with installed weight less than 9 lbs./sq. ft. require a minimum of one fastener per tile.
100	> 40 - 60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails The nose of all ridge, hip and rake tiles shall be set in a bead of roofers mastic.		
110	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.		

TABLE 1507.3.7
CLAY AND CONCRETE TILE ATTACHMENT (Cont'd)

INTERLOCKING CLAY OR CONCRETE ROOF TILE WITH PROJECTING ANCHOR LUGS (Installations on solid sheathing without battens)		
<i>Maximum basic wind speed (mph)</i>	<i>Mean roof height (feet)</i>	<i>Minimum All roof slopes 4 units vertical in 12 units horizontal Maximum slope 7 units vertical in 12 units horizontal</i>
120	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.
130	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.2
85	0 - 60	One fastener per tile.
100	0 - 40	One fastener per tile.
100	>40 - 60	The head of all tiles shall be nailed. The nose of all eave tiles shall be fastened with approved clips. All rake tiles shall be nailed with two nails The nose of all ridge, hip and rake tiles shall be set in a bead of roofer's mastic.
110	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.
120	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.
130	0 - 60	The fastening system shall resist the wind forces in Section 1609.5.2.
All	> 60	The fastening system shall resist the wind forces in Section 1609.5.2.

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s, 1 pound per square foot = 4.882 kg/m².

- Minimum fastener size. Hot dipped galvanized ring shank or other corrosion-resistant nails not less than No. 11 gage with 5/16-inch head. Fasteners shall be long enough to penetrate into the sheathing 0.75 inch or through the thickness of the sheathing, whichever is less. Attaching wire for clay and concrete tile shall not be smaller than 0.083 inch and shall be copper, brass or stainless steel.
- Snow areas. A minimum of two fasteners per tile are required or battens and one fastener.
- Roof slopes greater than 24:12. The nose of all tiles shall be securely fastened.
- Horizontal battens. Battens shall be not less than 1 inch by 2 inch nominal. Provisions shall be made for drainage by a minimum of 1/8-inch riser at each nail or by 4-foot-long battens with at least a 0.5-inch separation between battens. Horizontal battens are required for slopes over 7:12.
- Perimeter fastening areas include three tile courses but not less than 36 inches from either side of hips or ridges and edges of eaves and gable rakes.

RATIONALE: Requires all new rooftop photovoltaic systems materials in the WUI to comply with Class A standards, with some exceptions.

FINDINGS: Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. Requiring Class A solar panels materials on rooftops protects the home itself and its adjacent properties as well.

~~§ 15.04.370 CHAPTER 36 INSERTED - VERY HIGH FIRE HAZARD SEVERITY ZONE.~~

The Building Code is amended by adding a new Chapter 36 to read as follows:

Chapter 36 Very High Fire Hazard Severity Zone

Sec. 3601.1 Scope. This chapter shall apply to all buildings or structures or portions thereof erected, constructed, enlarged, or moved within or into the very high fire hazard severity zone as herein defined.

Sec. 3601.2 Very High Fire Hazard Severity Zone Defined. ~~VERY HIGH FIRE HAZARD SEVERITY ZONE~~ is that area as described on the Official Fire District Map as ~~VERY HIGH FIRE HAZARD SEVERITY ZONE~~ or FIRE ZONE FOUR and dated 2008, or such subsequent map as may be adopted by the City Council of the City of Monrovia. This map is on file with the City Clerk of the City of Monrovia.

Sec. 3602.1 Exterior Walls. The exterior walls of all buildings or structures shall have a fire resistive rating of not less than one hour. Underfloor areas, porches, patios or similar areas attached to the principal building shall be provided with exterior walls having a fire resistive rating of not less than one hour. Exterior glass in such walls shall be double glazed.

Exceptions:

1. Except where otherwise required by this code, exterior walls need not have a fire resistive rating when any of the following conditions exist:

1.1. The exterior walls front on a public way having a width of not less than 40 feet.

1.2. The building is of Type I or II construction.

1.3. The building is a one-story detached accessory building having a projected roof area not exceeding 484 square feet. To be considered detached, an accessory building shall be separated from the primary building by not less than 20 feet at any point in a direct line of measurement.

2. Architectural trim, handrails and similar finish items may be of wood.

3. Unprotected wood doors and windows may be used except where openings are required to be fire-protected.

3602.2 Projections. Eave openings, exterior balconies and similar architectural appendages extending beyond the floor area as defined in Section 207 shall be of one-hour fire resistive construction.

2013 15-01. Section 1507.3.1 of the 2013 Edition of the California Building Code is amended to read as follows:

1507.3.1 Deck requirements. Concrete and clay tile shall be installed only over solid sheathing or spaced structural sheathing boards.

RATIONALE: Section 1507.3.1 is amended to require concrete and clay tiles to be installed only over solid structural sheathing boards. The change is necessary because there were numerous observations of tile roofs pulling away from wood framed buildings following the 1994 Northridge Earthquake. The SEAOSC/LA City Post Northridge Earthquake committee findings indicated significant problems with tile roofs was due to inadequate design and/or construction. Therefore, the amendment is needed to minimize such occurrences in the event of future significant earthquakes.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake, the 1987 Whittier Narrows Earthquake, the 1971 San Fernando Earthquake and the 1933 Long Beach Earthquake.

This amendment will reduce the failure of concrete and clay tile roofs during a significant earthquake and is in accordance with the scope and objectives of the International Building Code.

2013 16-01. Section 1613.6 is added to Chapter 16 of the 2013 Edition of the California Building Code to read as follows:

1613.6 ASCE 7, 12.12.3 Modify ASCE 7 Equation 12.12-1 of Section 12.12.3 to read as follows:

$$\delta_M = \frac{C_d \delta_{max}}{I_e} \quad (12.12-1)$$

RATIONALE: The inclusion of the importance factor in this equation has the unintended consequence of reducing the minimum seismic separation distance for important facilities such as hospitals, schools, police and fire stations from adjoining structures. The proposal to omit the importance factor from Equation 12.12-1 will ensure that a safe seismic separation distance is provided. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake, the 1987 Whittier Narrows Earthquake, the 1971 San Fernando Earthquake and the 1933 Long Beach Earthquake. The proposed modification to omit the importance factor in the equation ensures that a safe seismic separation distance is maintained for important facilities from adjoining structures and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 16-02. Section 1613.7 is added to Chapter 16 of the 2013 Edition of the California Building Code to read as follows:

1613.7 ASCE 7, 12.2.3.1, Exception 3. Modify ASCE 7 Section 12.2.3.1 Exception 3 to read as follows:

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

RATIONALE: Observed damages to one and two family dwellings of light frame construction after the Northridge Earthquake may have been partially attributed to vertical irregularities common to this type of occupancy and construction. In an effort to improve quality of construction and incorporate lesson learned from studies after the Northridge Earthquake, the proposed modification to ASCE 7-10 Section 12.2.3.1 Exception 3 by limiting the number of stories and height of the structure to two stories will significantly minimize the impact of vertical irregularities and concentration of inelastic behavior from mixed structural systems. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake. The proposed modification to limit mixed structural system to two stories is intended to improve quality of construction by reducing potential damages that may result from vertical irregularities of the structural system in buildings subject to high seismic load and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 16-03. Section 1613.8 is added to Chapter 16 of the 2013 Edition of the California Building Code to read as follows:

1613.8 ASCE 7, Section 12.11.2.2.3. Modify ASCE 7, Section 12.11.2.2.3 to read as follows:

12.11.2.2.3 Wood Diaphragms. In wood diaphragms, the continuous ties shall be in addition to the diaphragm sheathing. Anchorage shall not be accomplished by use of toe nails or nails subject to withdrawal nor shall wood ledgers or framing be used in cross-grain bending or cross-grain tension. 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. Added chords of diaphragms may be used to form subdiaphragms to transmit the anchorage forces to the main continuous crossties.
2. The maximum diaphragm shear used to determine the depth of the subdiaphragm shall not exceed 75% of the maximum diaphragm shear.

RATIONALE: A joint Structural Engineers Association of Southern California (SEAOSC), Los Angeles County and Los Angeles City Task Force investigated the performance of concrete and masonry construction with flexible wood diaphragm failures after the Northridge earthquake. It was concluded at that time that continuous ties are needed at specified spacing to control cross grain tension in the interior of the diaphragm. Additionally, there was a need to limit subdiaphragm allowable shear loads to control combined orthogonal stresses within the diaphragm. Recognizing the importance and need to continue the recommendation made by the task force while taking into consideration the improve performances and standards for diaphragm construction today, this proposal increases the continuous tie spacing limit to 40 ft in lieu of 25 ft and to use 75% of the allowable code diaphragm shear to determine the depth of the sub-diaphragm in lieu of the 300 plf and is deemed appropriate and acceptable. Due to the frequency of this type of failure during the past significant earthquakes, various jurisdictions within the Los Angeles region have taken this additional step to prevent roof or floor diaphragms from pulling away from concrete or masonry walls. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake. The proposed modification to require special anchorage of the diaphragm to the wall and limit the allowable shear will address special needs for concrete and masonry construction with flexible wood diaphragm and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 16-04. Section 1613.9 is added to Chapter 16 of the 2013 Edition of the California Building Code to read as follows:

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 constructing such buildings on or into slopes steeper than one unit vertical in three units horizontal (33.3%). 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 division.

Exception: Non-habitable accessory buildings and decks not supporting or supported from the main building are exempt from these regulations.

1613.9.3 Definitions. For the purposes of this section certain terms are defined as follows:

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

DIAPHRAGM ANCHORS are assemblies that connect a diaphragm to the adjacent foundation at the uphill diaphragm edge.

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

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

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

HILLSIDE BUILDING is any building or portion thereof constructed on or into a slope steeper than one unit vertical in three units horizontal (33.3%). 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 a direct connection as described in Sections 1613.9.5 and 1613.9.7.3 between the diaphragm and the uphill foundation.

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

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

UPHILL FOUNDATION is 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 section shall be analyzed, designed, and constructed in accordance with the provisions of this division. 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 Section 2205.2.2 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% 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 four 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 1613.9.7.3, 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% 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 four 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 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 (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 three-inch (75 mm) nominal width. The effects of eccentricity on wood members shall be evaluated as required per Item 9.
- 4. Design.** Primary and secondary anchorage, including diaphragm struts, splices, and collectors shall be designed for 125% of the tributary force.
- 5. Allowable Stress Increase.** The one-third allowable stress increase permitted under 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 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.

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 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 AF&PA SDPWS Section 4.3.2. 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. The minimum horizontal length of a step shall be eight feet (2438 mm) and the maximum vertical height of a step shall be two feet, eight 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, and
3. Tension-only braced frames.

Braced frames designed in accordance with the requirements of Section 2205.2.2 of this Code 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 five 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 5/8 inch (15.9 mm) diameter machine bolts.

RATIONALE: Due to the difficulty of fire suppression vehicles accessing winding and narrow hillside properties and the probabilities for future earthquakes in the Los Angeles region, this technical amendment is required to address the special needs for buildings constructed on hillside locations. A joint Structural Engineers Association of Southern California (SEAOSC) and both the Los Angeles County and Los Angeles City Task Force investigated the performance of hillside building failures after the Northridge earthquake. Numerous hillside failures resulted in loss of life and millions of dollars in damage. These criteria were developed to minimize the damage to these structures and have been in use by both the City and County of Los Angeles for several years with much success. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Topographical and Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Additionally, the topography within the Los Angeles region includes significant hillsides with narrow and winding access that makes timely response by fire suppression vehicles challenging and difficult. The proposed modification establishes design parameters to better mitigate and limit property damage that are the results of increased seismic forces which are imparted upon hillside buildings and structures and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 16-05. Section 1613.10 is added to Chapter 16 of the 2013 Edition of the California Building Code to read as follows:

1613.10 Suspended Ceilings. Minimum design and installation standards for suspended ceilings shall be determined in accordance with the requirements of Section 2506.2.1 of this Code and this section.

1613.10.1 Scope. This part contains special requirements for suspended ceilings and lighting systems. Provisions of Section 13.5.6 of ASCE 7-10 shall apply except as modified herein.

1613.10.2 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.

1613.10.3 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 adaptors through the ceiling tile. Sprinkler heads and other penetrations shall have a 2 in. (50mm) oversize ring, sleeve, or adapter through the ceiling tile to allow for free movement of at least 1 in. (25mm) 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.

Sprinkler heads penetrating fire-resistance-rated floor/ceiling or roof/ceiling assemblies shall comply with Section 714 of this Code.

1613.10.4 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.

1613.10.4.1 General. Ceiling suspension systems shall be connected and braced with vertical hangers attached directly to the structural deck 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.

1613.10.4.2 Assembly Device. All lay-in panels shall be secured to the suspension ceiling assembly with two hold-down clips minimum for each tile within a 4-foot (1219 mm) radius of the exit lights and exit signs.

1613.10.4.3 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 Section 1006.3 of this Code.

1613.10.4.4 Supports for Appendage. Separate support from the structural deck shall be provided for all appendages such as light fixtures, air diffusers, exit signs, and similar elements.

RATIONALE: The California Building Code has little to no information regarding the safe design and construction requirements for ceiling suspension systems subject to seismic loads. It is through the experience of prior earthquakes, such as the Northridge Earthquake, that this amendment is proposed so as to minimize the amount of bodily and building damage within the spaces in which this type of ceiling will be installed. This proposed amendment complements ASCE 7-10 Chapter 13 Section 13.5.6.2.2 and the cited reference to ASTM E580. The amended requirements retained herein are a continuation of portions of an amendment adopted during the previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake. The proposed modification requiring safe design and construction requirements for ceiling suspension systems to resist seismic loads is intended to minimize the amount of damage within a building and therefore need to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 17-01. Section 1704.5 of the 2013 Edition of the California Building Code is amended to read as follows:

1704.5 Structural Observations. Where required by the provisions of Section 1704.5.1 or 1704.5.2, the owner shall employ a registered design professional structural observer to perform structural observations as defined in Section 1702. The structural observer shall be one of the following individuals:

1. The registered design professional responsible for the structural design, or
2. A registered design professional designated by the registered design professional responsible for the structural design.

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

~~At the conclusion of the work included in the permit, the structural observer shall submit to the building official a written statement that the site visits have been made and identify any reported deficiencies that, to the best of the structural observer's knowledge, have not been resolved.~~

The owner or owner's representative shall coordinate and call a preconstruction meeting between the structural observer, contractors, affected subcontractors and special 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 resisting systems of the structure and to review scheduling of the required observations. A record of the meeting shall be included in the report submitted to the building official.

Observed deficiencies shall be reported in writing to the owner or owner's representative, special inspector, contractor and the building official. Upon the form prescribed by the building official, the structural observer shall submit to the building official a written statement at each significant construction stage stating that the site visits have been made and identifying 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 building official.

RATIONALE: The language in Section 1704.5 of the California Building Code permits the owner to employ any registered design professional to perform structural observations with minimum guideline. However, it is important to recognize that the registered design professional responsible for the structural design has thorough knowledge of the building he/she designed. By requiring the registered design professional responsible for the structural design or their designee who were involved with the design to observe the construction, the quality of the observation for major structural elements and connections that affect the vertical and lateral load resisting systems of the structure will greatly be increased. Additional requirements are provided to help clarify the role and duties of the structural observer and the method of reporting and correcting observed deficiencies to the building official. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake. The proposed modification to require the registered design professional in responsible charge for the structural design to observe the construction will help ensure acceptable standards of workmanship is provided and to improve the quality of the observation and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 17-02. Section 1704.5.1 of the 2013 Edition of the California Building Code is amended to read as follows:

1704.5.1 Structural observations for seismic resistance. Structural observations shall be provided for those structures assigned to Seismic Design Category D, E or F, where one or more of the following conditions exist:

1. The structure is classified as Risk Category III or IV in accordance with Table 1604.5.
2. The height of the structure is greater than 75 feet (22860 mm) above the base.
3. ~~The structure is assigned to Seismic Design Category E, is classified as Risk Category I or II in accordance with Table 1604.5, and is greater than two stories one stories above grade plane a lateral design is required for the structure or portion thereof.~~

Exception: One-story wood framed Group R-3 and Group 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% sloped), assigned to Seismic Design Category D.

4. When so designated by the registered design professional responsible for the structural design.
5. When such observation is specifically required by the building official.

RATIONALE: With the higher seismic demand placed on buildings and structures in this region, the language in Section 1704.5.1 of the California Building Code would permit many low-rise buildings and structures with complex structural elements to be constructed without the benefit of a structural observation. By requiring a registered design professional to observe the construction, the quality of the observation for major structural elements and connections that affect the vertical and lateral load resisting systems of the structure will greatly be increased. An exception is provided to permit simple structures and buildings to be excluded. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake. The proposed modification to require the registered design professional in responsible charge for the structural design to observe the construction will help ensure acceptable standards of workmanship is provided and to improve the quality of the observation and therefore need to be incorporated into the code to assure that

new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 17-03. Section 1705.3 of the 2013 Edition of the California Building Code is amended to read as follows:

1705.3 Concrete Construction. The special inspections and verifications for concrete construction shall be as required by this section and Table 1705.3.

Exceptions: Special inspection 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) regardless of the compressive strength specified in the construction documents or used in the footing construction.
2. Continuous concrete footings supporting walls of buildings three stories or less in height 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 1805.4.2; or
 - 2.3. The structural design of the footing is based on a specified compressive strength, f_c , no greater than 2,500 pounds per square inch (psi) (17.2 Mpa), regardless of the compressive strength specified in the 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.

RATIONALE: Results from studies after the 1994 Northridge Earthquake indicated that a lot of the damage was attributed to a lack of quality control during construction resulting in poor performance of the building or structure. Therefore, the proposed amendment requires special inspection for concrete with a compressive strength greater than 2,500 pounds per square inch. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake. The proposed modification to require special inspection for concrete with a compressive strength greater than 2,500 psi to improve quality of control during construction and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 17-04. Table 1705.3 of the 2013 Edition of the California Building Code is amended to read as follows:

**TABLE 1705.3
REQUIRED VERIFICATION AND INSPECTION OF CONCRETE CONSTRUCTION**

VERIFICATION AND INSPECTION	CONTINUOUS	PERIODIC	REFERENCE STANDARD ^a	IBC REFERENCE
3. Inspection of anchors cast in concrete where allowable loads have been increased or	-	X	ACI 318: D.9.2 8.1.3, 21.1.8	1908.5, 1909.4

where strength design is used.				
4. Inspection of anchors post-installed in hardened concrete members ^b .	-	X	ACI 318: 3.8.6, 8.1.3, 21.1.8	1909.1
a. <u>Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads.</u>	X		ACI 318:D.9.2.4	-
b. <u>Mechanical anchors and adhesive anchors not defined in 4.a.</u>		X	ACI 318: D.9.2	-

b. Specific requirements for special inspection shall be included in the research report for the anchor issued by an approved source in accordance with ACI 355.2, D.9.2 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.

(Portions of table not shown remain unchanged.)

RATIONALE: The requirements for the special inspection of concrete are contained in Table 1705.3, including the installation of anchors in concrete. The table currently references the 2008 Edition of the ACI 318. Appendix D9.2 has been revised in the 2011 Edition of the ACI 318 specifically to address the inspection of concrete anchors, both adhesive and mechanical anchors. Table 1705.3 is being amended to reflect the new provisions in the 2011 Edition of the ACI 318.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 17-05. Exception 3 of Section 1705.11 of the 2013 Edition of the California Building Code is amended to read as follows:

1705.11 Special inspections for seismic resistance. Special inspections itemized in Sections 1705.11.1 through 1705.11.8, unless exempted by the exceptions of Section 1704.2, are required for the following:

1. The seismic force-resisting systems in structures assigned to Seismic Design Category C, D, E or F in accordance with Sections 1705.11.1 through 1705.11.3, as applicable.
2. Designated seismic systems in structures assigned to Seismic Design Category C, D, E or F in accordance with Section 1705.11.4.
3. Architectural, mechanical and electrical components in accordance with Sections 1705.11.5 and 1705.11.6.
4. Storage racks in structures assigned to Seismic Design Category D, E or F in accordance with Section 1705.11.7.
5. Seismic isolation systems in accordance with Section 1705.11.8.

Exception: Special inspections itemized in Sections 1705.11.1 through 1705.11.8 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 1613.3.4, 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 1613.3.4, 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, is not assigned to Seismic Design Category D, E or F 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.

RATIONALE: In Southern California, very few detached one- or two-family dwellings not exceeding two stories above grade plane are built as "box-type" structures, especially those in hillside areas and near the oceanfront. Many steel moment frames or braced frames and/or cantilevered columns within buildings can still be shown as "regular" structures by calculations. With the higher seismic demand placed on buildings and structures in this region, the language in Section 1705.11 Exception 3 of the California Building Code would permit many detached one- or two-family dwellings not exceeding two stories above grade plane with complex structural elements to be constructed without the benefit of special inspections. By requiring special inspections, the quality of major structural elements and connections that affect the vertical and lateral load resisting systems of the structure will greatly be increased. The exception should only be allowed for detached one- or two-family dwellings not exceeding two stories above grade plane assigned to Seismic Design category A, B and C.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake. The proposed modification to require special inspections for detached one- or two-family dwellings not exceeding two stories above grade plane assigned to Seismic Design Category D, E and F will help ensure that acceptable standards of workmanship and quality of construction are provided and therefore needs to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 17-06. Section 1711.1.1, Section 1711.1.2 and Chapter 35 of the 2013 Edition of the California Building Code are amended to read as follows:

1711.1.1 General. The vertical load-bearing capacity, torsional moment capacity and deflection characteristics of joist hangers shall be determined in accordance with ASTM D 1761 and ASTM D 7147 as specified below using lumber having a specific gravity of 0.49 or greater, but not greater than 0.55, as determined in accordance with AF&PA NDS for the joist and headers.

Exception: The joist length shall not be required to exceed 24 inches (610 mm).

1711.1.2 Vertical load capacity for joist hangers. The vertical load-bearing capacity for the joist hanger shall be determined by testing a minimum of three joist hanger assemblies as specified in ASTM D 1761 or ASTM D 7147. If the ultimate vertical load for any one of the tests varies more than 20 percent from the average ultimate vertical load, at least three additional tests shall be conducted. The allowable vertical load-bearing of the joist hanger shall be the lowest value determined from the following:

1. The lowest ultimate vertical load for a single hanger from any test divided by three (where three tests are conducted and each ultimate vertical load does not vary more than 20 percent from the average ultimate vertical load).
2. The average ultimate vertical load for a single hanger from all tests divided by three (where six or more tests are conducted).
3. The average from all tests of the vertical loads that produce a vertical movement of the joist with respect to the header of 1/8 inch (3.2 mm).
4. The sum of the allowable design loads for nails or other fasteners utilized to secure the joist hanger to the wood members and allowable bearing loads that contribute to the capacity of the hanger.
5. The allowable design load for the wood members forming the connection.

Amend the Reference Standards in Chapter 35 for ASTM as follows:

D 1761-06 D 1761-88(2000) §1	Test Method for Mechanical Fasteners in Wood	1711.1.1 1711.1.2 1711.1.3
D 7147-05	Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers	1711.1.1 1711.1.2

RATIONALE: ASTM D 1760-06 contains exactly the same standard test methods as ASTM D 1761-88 (2000) §1 except for joist hangers. Standard test methods for joist hangers found in former ASTM D 1761-88 (2000) §1 sections 41 to 50 were removed from ASTM D 1761-06 due to their inclusion and update in the new standard ASTM D 7147-05 Standard Specification for Testing and Establishing Allowable Loads of Joist Hangers. Nonetheless, both the 2009 and 2012 editions of the IBC reference ASTM D1761-2006 for this testing. As a result, testing of joist hangers no longer has a valid reference standard.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 18-01. Section 1807.1.4 of the 2013 Edition of the California Building Code is amended to read as follows:

1807.1.4 Permanent wood foundation systems. Permanent wood foundation systems shall be designed and installed in accordance with AF&PA PWF. Lumber and plywood shall be treated in accordance with AWPA U1 (Commodity Specification A, Use Category 4B and Section 5.2) and shall be identified in accordance with Section 2303.1.8.1. Permanent wood foundation systems shall not be used for structures assigned to Seismic Design Category D, E or F.

RATIONALE: No substantiating data has been provided to show that wood foundation systems are effective in supporting buildings and structures during a seismic event while being subject to deterioration caused by the combined detrimental effects of constant moisture in the soil and wood-destroying organisms. Wood foundation systems not properly treated and protected against deterioration, have performed very poorly and have led to slope failures. Most contractors are typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic events and wet applications. The proposed amendment takes the precautionary steps to reduce or eliminate potential problems that may result in using wood foundation systems that experience relatively rapid decay due to

the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Climatic and Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake. In addition, the region is within a climate system capable of producing major winds, fire and rain related disasters, including but not limited to those caused by the Santa Ana winds and El Nino (or La Nina) subtropical-like weather. This region is especially susceptible to more active termite and wood attacking insects and microorganisms. The proposed modification to prohibit the use of wood foundation systems as well as limit prescriptive design provisions in an effort to mitigate potential problems or deficiencies due to the proliferation of wood-destroying organisms and therefore needs to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 18-02. Section 1807.1.6 of the 2013 Edition of the California Building Code is amended to read as follows:

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.

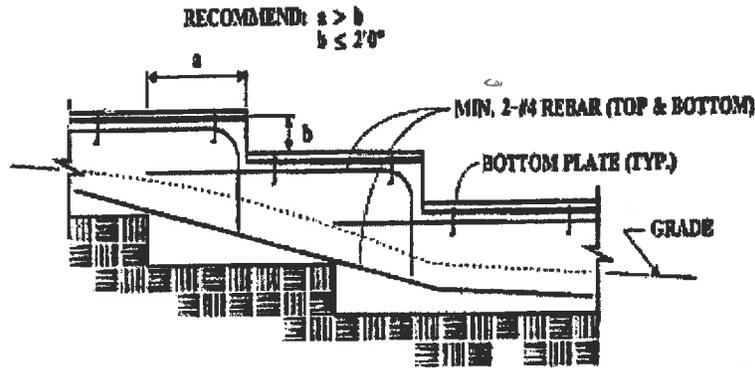
RATIONALE: With the higher seismic demand placed on buildings and structures in this region, it is deemed necessary to take precautionary steps to reduce or eliminate potential problems that may result by following prescriptive design provisions that does not take into consideration the surrounding environment. Plain concrete performs poorly in withstanding the cyclic forces resulting from seismic events. In addition, no substantiating data has been provided to show that under-reinforced foundation walls are effective in resisting seismic loads and may potentially lead to a higher risk of failure. It is important that the benefit and expertise of a registered design professional be obtained to properly analyze the structure and take these issues into consideration. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake. The proposed modification to prohibit prescriptive design provisions for foundation walls as plain concrete have performed poorly in withstanding the cyclic forces resulting from seismic events and to require the walls to be designed by a registered design professional to ensure that the proper analysis of the structure takes into account the surrounding condition and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 18-03. Section 1809.3 of the 2013 Edition of the California Building Code is amended to read as follows:

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 No. 4 rebar. Two bars shall be placed at the top and bottom of the footings as shown in Figure 1809.3.



STEPPED FOUNDATIONS

**FIGURE 1809.3
STEPPED FOOTING**

RATIONALE: With the higher seismic demand placed on buildings and structures in this region, precautionary steps are proposed to reduce or eliminate potential problems that may result for under reinforced footings located on sloped surfaces. Requiring minimum reinforcement for stepped footings is intended to address the problem of poor performance of plain or under-reinforced footings during a seismic event. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to require minimum reinforcement in stepped footings is intended to improve performance of buildings and structures and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 18-04. Section 1809.7 and Table 1809.7 of the 2013 Edition of the California Building Code are amended to read as follows:

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^{a, b, c, d, e}**

NUMBER OF FLOORS SUPPORTED BY THE FOOTING ^f	WIDTH OF FOOTING (inches)	THICKNESS OF FOOTING (inches)
1	12	6
2	15	6
3	18	8 ^g

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm

- Depth of footings shall be in accordance with Section 1809.4.
- The ground under the floor shall be permitted to be excavated to the elevation of the top of the footing.
- ~~Interior stud-bearing walls shall be permitted to be supported by isolated footings. The footing width and length shall be twice the width shown in this table, and footings shall be spaced not more than 6 feet on center. Not Adopted.~~
- See Section 1908 for additional requirements for concrete footings of structures assigned to Seismic Design Category C, D, E or F.
- For thickness of foundation walls, see Section 1807.1.6.

- f. Footings shall be permitted to support a roof 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.~~

RATIONALE: No substantiating data has been provided to show that under-reinforced footings are effective in resisting seismic loads and may potentially lead to a higher risk of failure. Therefore, this proposed amendment requires minimum reinforcement in continuous footings to address the problem of poor performance of plain or under-reinforced footings during a seismic event. With the higher seismic demand placed on buildings and structures in this region, precautionary steps are proposed to reduce or eliminate potential problems that may result by following prescriptive design provisions for footing that does not take into consideration the surrounding environment. It was important that the benefit and expertise of a registered design professional be obtained to properly analyze the structure and take these issues into consideration. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Task Force that investigated the poor performance observed in the 1994 Northridge Earthquake. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to limit the use of the prescriptive design provisions and under-reinforced or plain concrete is to ensure that the proper analysis of the structure takes into account the surrounding condition and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 18-05. Section 1809.12 of the 2013 Edition of the California Building Code is amended to read as follows:

1809.12 Timber footings. Timber footings shall be permitted for buildings of Type V construction and as otherwise approved by the building official. Such footings shall be treated in accordance with AWPA U1 (Commodity Specification A, Use Category 4B). Treated timbers are not required where placed entirely below permanent water level, or where used as capping for wood piles that project above the water level over submerged or marsh lands. The compressive stresses perpendicular to grain in untreated timber footing 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.

RATIONALE: No substantiating data has been provided to show that timber footings are effective in supporting buildings and structures during a seismic event, especially while being subjected to deterioration caused by the combined detrimental effects of moisture in the soil and wood-destroying organisms. Timber footings, when they are not properly treated and protected against deterioration, have performed very poorly. Most contractors are typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic event and wet applications. The proposed amendment takes the precautionary steps to reduce or eliminate potential problems that may result by using timber footings that experience relatively rapid decay due to the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Climatic and Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. In addition, the region is within a climate system capable of producing major winds, fire and rain related disasters, including but not limited to those caused by the Santa Ana winds and El Nino (or La Nina) subtropical-like weather. This region is especially susceptible to more active termite and wood attacking insects and microorganisms. The proposed modification to prohibit the use of timber footings in an effort to mitigate potential problems or deficiencies due to the proliferation of wood-destroying

organisms and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 18-06. Section 1810.3.2.4 of the 2013 Edition of the California Building Code is amended to read as follows:

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 D 25. 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.

RATIONALE: No substantiating data has been provided to show that timber deep foundation is effective in supporting buildings and structures during a seismic event while being subject to deterioration caused by the combined detrimental effect of constant moisture in the soil and wood-destroying organisms. Timber deep foundation, when they are not properly treated and protected against deterioration, has performed very poorly. Most contractors are typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic event and wet applications. The proposed amendment takes the precautionary steps to reduce or eliminate potential problems that may result by using timber deep foundation that experience relatively rapid decay due to the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Climatic and Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. In addition, the region is within a climate system capable of producing major winds, fire and rain related disasters, including but not limited to those caused by the Santa Ana winds and El Nino (or La Nina) subtropical-like weather. This region is especially susceptible to more active termite and wood attacking insects and microorganisms. The proposed modification to prohibit the use of timber deep foundation in an effort to mitigate potential problems or deficiencies due to the proliferation of wood-destroying organisms and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 19-01. Section 1905.1.3 of the 2013 Edition of the California Building Code is amended to read as follows:

1905.1.3 ACI 318, Section 21.4. Modify ACI 318, Section 21.4, by renumbering Section 21.4.3 to become 21.4.4 and adding new Sections 21.4.3, 21.4.5, 21.4.6 and 21.4.7 to read as follows:

21.4.3 – 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.

21.4.4 – Elements of the connection that are not designed to yield shall develop at least 1.5 S_y.

21.4.5 – ~~Wall piers in Seismic Design Category D, E or F shall comply with Section 1905.1.4 of the International Building Code.~~In structures assigned to Seismic Design Category D, E or F, intermediate precast wall panels and wall piers shall be designed in accordance with Section 21.9 or 21.13.

21.4.6 – Wall piers not designed as part of a moment frame in buildings assigned to Seismic Design Category C shall have transverse reinforcement designed to resist the shear forces determined from

21.3.3. Spacing of transverse reinforcement shall not exceed 8 inches (203 mm). Transverse reinforcement shall be extended beyond the pier clear height for at least 12 inches (305 mm).

Exceptions:

1. Wall piers that satisfy 21.13.
2. Wall piers along a wall line within a story where other shear wall segments provide lateral support to the wall piers and such segments have a total stiffness of at least six times the sum of the stiffnesses of all the wall piers.

21.4.7 – Wall segments with a horizontal length-to-thickness ratio less than 2.5 shall be designed as columns.

RATIONALE: The design provision for wall pier detailing was originally introduced by SEACC in 1987 to legacy Uniform Building Code (UBC) and was included in the 1988 UBC through the 1997 UBC (2002 CBC). The wall pier detailing provision prescribed under Section 1905.1.4 was intended for high seismic zones equivalent to current Seismic Design Category D, E or F. Section 1905.1.3 was added as a complement of wall pier detailing in Seismic Design Category C (formerly seismic zones 2A and 2B under the legacy model code). ACI 318 Commentary R 21.1.1 emphasized "it is essential that structures assigned to higher Seismic Design Categories possess a higher degree of toughness", and further encourages practitioners to use special structural wall system in regions of high seismic risk. ASCE 7 Table 12.2-1 permits intermediate precast structural wall system in Seismic Design Category D, E or F. Current Section 1905.1.3 does not limit to just structures assigned to Seismic Design Category C. The required shear strength under 21.3.3, referenced in Section 21.4.6, is based on V_u under either nominal moment strength or two times the code prescribed earthquake force. The required shear strength in 21.6.5.1, referenced in Section 21.9.8.2 (IBC 1905.1.4), is based on the probable shear strength, V_p , under the probable moment strength, M_{pr} . In addition, the spacing of required shear reinforcement is 8 inches on center under Section 21.4.6 instead of 6 inches on center with seismic hooks at both ends under Section 21.9.8.2. Requirement of wall pier under Section 21.9.8.2 would enhance better ductility.

By virtue of ACI 318 Section 21.1.1.7(d), intermediate precast structural walls designed under Section 21.4, material requirements intended under provisions 21.1.4, 21.1.5, 21.1.6, and 21.1.7 would be excluded for structures assigned to Seismic Design Category D, E or F. Clarification of ACI 318 Chapter 21 is needed to ensure that structural walls designed under ASCE 7 Table 12.2-1 using the intermediate wall panel category would conform to ductility requirements comparable to special structural wall; and conformance to the long standing practice of ACI 318 to impose special requirements for high seismic design regions. Whereas new ACI 318 section 21.4.4 extends requirement for wall piers be designed in accordance with 21.9 or 21.13. This amendment gives explicit requirement under which design and detailing need to conform to special structural wall system provision in ACI-318 Section 21.9, which covers both cast-in-place as well as precast. This amendment further gives building officials the tools to enforce minimum life safety building performance under earthquake forces in Seismic Design Category D, E or F. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

Current practice in commercial buildings constructed using precast wall panel systems have large window and door openings and/or narrow wall piers. Wall panels varying up to three stories high with openings resembles wall frame which is not currently recognized under any of the defined seismic-force resisting systems other than consideration of structural wall system. Conformance to special structural wall system design and detailing of wall piers ensures minimum life safety performance in resisting earthquake forces for structures in Seismic Design Category D, E or F. Proposed modification separates wall piers designed for structures assigned to Seismic Design Category C from those assigned to Seismic Design Category D, E or F.

This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of

producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to wall pier detailing is intended to assure that ductility requirements for high seismic region is provided and therefore needs to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code and ACI 318.

2013 19-02. Section 1905.1.8 of the 2013 Edition of the California Building Code is amended to read as follows:

1905.1.8 ACI 318, Section 22.10. Delete ACI 318, Section 22.10, and replace with the following:

22.10 – Plain concrete in structures assigned to Seismic Design Category C, D, E or F.

22.10.1 – Structures assigned to Seismic Design Category C, D, E or F shall not have elements of structural plain concrete, except as follows:

- (a) ~~Structural plain concrete basement, foundation or other walls below the base are permitted in detached one and two family dwellings three stories or less in height constructed with stud-bearing walls. In dwellings assigned to Seismic Design Category D or E, the height of the wall shall not exceed 8 feet (2438 mm), the thickness shall not be less than 7½ inches (190 mm), and the wall shall retain no more than 4 feet (1219 mm) of unbalanced fill. Walls shall have reinforcement in accordance with 22.6.6.5. Concrete used for fill with a minimum cement content of two (2) sacks of Portland cement or cement-like material 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.*

~~Exception: In detached one and two family dwellings three stories or less in height, the projection of the footing beyond the face of the supported member is permitted to exceed the footing thickness.~~

- (c) *Plain concrete footings supporting walls are permitted provided the footings have at least two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. For footings that exceed 8 inches (203 mm) in thickness, a minimum of one bar shall be provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.*

Exceptions:

- ~~1. In Seismic Design Categories A, B and C, detached one and two-family dwellings three stories or less in height and constructed with stud-bearing walls, are permitted to have plain concrete footings without longitudinal reinforcement with at least two continuous longitudinal reinforcing 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.~~
- ~~2. For foundation systems consisting of a plain concrete footing and a plain concrete stem wall, a minimum of one bar shall be provided at the top of the stem wall and at the bottom of the are footing.~~
- ~~3. Where a slab on ground is cast monolithically with the footing, one No. 5 bar is permitted to be located at either the top of the slab or bottom of the footing.~~

RATIONALE: This proposed amendment requires minimum reinforcement in continuous footings to address the problem of poor performance of plain or under-reinforced footings during a seismic event. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance

observed in 1994 Northridge Earthquake. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to require minimum reinforcement to address the problem of poor performance of plain or under-reinforced footings during a seismic event and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 19-03. Section 1905.1 is amended and Sections 1905.1.10 thru 1905.1.12 are added to Chapter 19 of the 2013 Edition of the California Building Code to read as follows:

1905.1 General. The text of ACI 318 shall be modified as indicated in Sections 1905.1.1 through ~~1908.1.10~~1905.1.12.

1905.1.10 ACI 318, Section 21.6.4. Modify ACI 318, Section 21.6.4, by adding Section 21.6.4.8 and 21.6.4.9 as follows:

21.6.4.8 Where the calculated point of contra flexure is not within the middle half of the member clear height, provide transverse reinforcement as specified in ACI 318 Sections 21.6.4.1, Items (a) through (c), over the full height of the member.

21.6.4.9 – At any section where the design strength, ϕP_{n} , of the column is less than the sum of the shears V_e computed in accordance with ACI 318 Sections 21.5.4.1 and 21.6.5.1 for all the beams framing into the column above the level under consideration, transverse reinforcement as specified in ACI 318 Sections 21.6.4.1 through 21.6.4.3 shall be provided. For beams framing into opposite sides of the column, the moment components are permitted to be assumed to be of opposite sign. For the determination of the design strength, ϕP_{n} , of the column, these moments are permitted to be assumed to result from the deformation of the frame in any one principal axis.

1905.1.11 ACI 318, Section 21.9.4. Modify ACI 318, Section 21.9.4, by adding Section 21.9.4.6 as follows:

21.9.4.6 – Walls and portions of walls with $U_e > 0.35P_e$ shall not be considered to contribute to the calculated shear strength of the structure for resisting earthquake-induced forces. Such walls shall conform to the requirements of ACI 318 Section 21.13.

1905.1.12 ACI 318, Section 21.11.6. Modify ACI 318, by adding Section 21.11.6.1 as follows:

21.11.6.1 Collector and boundary elements in topping slabs placed over precast floor and roof elements shall not be less than 3 inches (76 mm) or $6 d_b$ in thickness, where d_b is the diameter of the largest reinforcement in the topping slab.

RATIONALE: This amendment is intended to carry over critical provisions for the design of concrete columns in moment frames from the legacy 1997 Uniform Building Code. Increased confinement is critical to the integrity of such columns and these modifications ensure that it is provided when certain thresholds are exceeded.

In addition, this amendment carries over from the legacy 1997 Uniform Building Code a critical provision for the design of concrete shear walls. It essentially limits the use of very highly gravity-loaded walls in being included in the seismic load resisting system, since their failure could have catastrophic effect on the building.

Furthermore, this amendment was incorporated in the code based on observations from the 1994 Northridge Earthquake. Rebar placed in very thin concrete topping slabs have been observed in some

instances to have popped out of the slab due to insufficient concrete coverage. This modification ensures that critical boundary and collector rebars are placed in sufficiently thick topping slab to prevent buckling of such reinforcements.

This proposed amendment is a continuation of an amendment adopted during previous code-adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to increase confinement in critical columns, limiting the use of highly gravity loaded walls, and increase concrete coverage in thin slabs will have to prevent failure of the structure and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 23-01. Section 2304.9.1 of the 2013 Edition of the California Building Code is amended to read as follows:

2304.9.1 Fastener requirements. Connections for wood members shall be designed in accordance with the appropriate methodology in Section 2301.2. The number and size of fasteners connecting wood members shall not be less than that set forth in Table 2304.9.1. Staple fasteners in Table 2304.9.1 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 building official.

RATIONALE: Due to the high geologic activities in the Southern California area and the expected higher level of performance on buildings and structures, this proposed local amendment limit the use of staple fasteners in resisting or transferring seismic forces. In September 2007, limited cyclic testing data was provided to the ICC Los Angeles Chapter Structural Code Committee showing that stapled wood structural shear panels do not exhibit the same behavior as the nailed wood structural shear panels. The test results of the stapled wood structural shear panels appeared much lower in strength and drift than the nailed wood structural shear panel test results. Therefore, the use of staples as fasteners to resist or transfer seismic forces shall not be permitted without being substantiated by cyclic testing. This proposed amendment is a continuation of a similar amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to limit the use of staple fasteners to resist or transfer seismic load improve the performance of buildings and structures during a seismic event and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 23-02. Section 2304.11.7 of the 2013 Edition of the California Building Code is amended to read as follows:

2304.11.7 Wood used in retaining walls and cribs. Wood installed in retaining or crib walls shall be preservative treated in accordance with AWPA U1 (Commodity Specifications A or F) for soil and fresh water use. Wood shall not be used in retaining or crib walls for structures assigned to Seismic Design Category D, E or F.

RATIONALE: No substantiating data has been provided to show that wood used in retaining or crib walls are effective in supporting buildings and structures during a seismic event while being subject to

deterioration caused by the combined detrimental effect of constant moisture in the soil and wood-destroying organisms. Wood used in retaining or crib walls, when they are not properly treated and protected against deterioration, have performed very poorly. Most contractors are typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic event and wet applications. The proposed amendment takes the precautionary steps to reduce or eliminate potential problems that may result by using wood in retaining or crib walls that experience relatively rapid decay due to the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Climatic and Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. In addition, the region is within a climate system capable of producing major winds, fire and rain related disasters, including but not limited to those caused by the Santa Ana winds and El Nino (or La Nina) subtropical-like weather. This region is especially susceptible to more active termite and wood attacking insects and microorganisms. The proposed modification to prohibit the use of wood in retaining or crib walls in an effort to mitigate potential problems or deficiencies due to the proliferation of wood-destroying organisms and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 23-03. Section 2305.4 is added to Chapter 23 of the 2013 Edition of the California Building Code to read as follows:

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.

RATIONALE: The overdriving of nails into the structural wood panel still remains a concern when pneumatic nail guns are used for wood structural panel shear wall nailing. Box nails were observed to cause massive and multiple failures of the typical 3/8-inch thick plywood during the 1994 Northridge Earthquake. The use of clipped head nails as allowed in Table A1 of AFPA SDPWS footnote referencing to ASTM F1667, continues to be restricted from being used in wood structural panel shear walls where the minimum nail head size must be maintained in order to minimize nails from pulling through sheathing materials. Clipped or mechanically driven nails used in wood structural panel shear wall construction were found to perform much less in previous wood structural panel shear wall testing done at the University of California Irvine. The existing test results indicated that, under cyclic loading, the wood structural panel shear walls were less energy absorbent and less ductile. The panels reached ultimate load capacity and failed at substantially less lateral deflection than those using same size hand-driven nails. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to require mechanically driven nails to have the same dimensions as hand-driven nail will result in improved quality of construction and performance of wood structural panel shear walls and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 23-04. Section 2305.5 is added to Chapter 23 of the 2013 Edition of the California Building Code to read as follows:

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 tightened to finger tight plus one half (1/2) wrench turn just prior to covering the wall framing.

RATIONALE: ICC-ES AC 155 Acceptance Criteria for Hold-downs (Tie-Downs) Attached to Wood Members is widely used to establish allowable values for hold-down connectors in evaluation reports. AC 155 uses monotonic loading to establish allowable values. Yet, cyclic and dynamic forces imparted on buildings and structures by seismic activity cause more damage than equivalent forces that are applied in a monotonic manner. However, the engineering, regulatory and manufacturing industries have not reached consensus on the appropriate cyclic or dynamic testing protocols. This condition is expected to continue for some time. In the interim, this proposed amendment continues to limit the allowable capacity to 75% of the evaluation report value to provide an additional factor of safety for statically tested anchorage devices. Steel plate washers will reduce the additional damage that can result when hold-down connectors are fastened to wood framing members. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles with additional editorial revisions for clarification.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to establish minimum performance requirements for hold-down connectors will reduce failure of wood structural panel shear walls due to excessive deflection and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 23-05. Section 2306.2 of the 2013 Edition of the California Building Code is amended to read as follows:

2306.2 Wood-frame diaphragms. Wood-frame diaphragms shall be designed and constructed in accordance with AF&PA SDPWS. Where panels are fastened to framing members with staples, requirements and limitations of AF&PA SDPWS 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 in Tables 2306.2(1) and 2306.2(2) are permitted to be increased 40 percent for wind design.

***Exception:** [DSA-SS, DSA-SS/CC and OSHPD 1, 2 &4] Wood structural panel diaphragms using staples as fasteners are not permitted by DSA and OSHPD.*

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 diaphragms are 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.

RATIONALE: The Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the damages to buildings and structures during the 1994 Northridge Earthquake recommended reducing allowable shear values in wood structural panel shear walls or diaphragms that were not substantiated by cyclic testing. That recommendation was consistent with a report to the Governor from the Seismic Safety Commission of the State of California recommending that code requirements be "more thoroughly substantiated with testing." The allowable shear values for wood structural panel shear walls or diaphragms fastened with staples are based on monotonic testing and does not take into consideration that earthquake forces load shear wall or diaphragm in a repeating and fully reversible manner.

In September 2007, limited cyclic testing was conducted by a private engineering firm to determine if wood structural panels fastened with staples would exhibit the same behavior as the wood structural panels fastened with common nails. The test result revealed that wood structural panel fastened with staples appeared to be much lower in strength and stiffness than wood structural panels fastened with common nails. It was recommended that the use of staples as fasteners for wood structural panel shear walls or diaphragms not be permitted to resist seismic forces in structures assigned to Seismic Design Category D, E and F unless it can be substantiated by cyclic testing.

Furthermore, the cities and county within the Los Angeles region has taken extra measures to maintain the structural integrity of the framing of shear walls and diaphragms designed for high levels of seismic forces by requiring wood sheathing be applied directly over the framing members and prohibiting the use of panels placed over gypsum sheathing. This proposed amendment is intended to prevent the undesirable performance of nails when gypsum board softens due to cyclic earthquake displacements and the nail ultimately does not have any engagement in a solid material within the thickness of the gypsum board.

This proposed amendment continues the previous amendment adopted during the 2010 code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to place design and construction limits on staples as fasteners used in wood structural panel or diaphragms not substantiated with cyclic testing will help to maintain minimum quality of construction and performance standards of structures and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 23-06. Section 2306.3 is amended and Section 2307.2 is added to the 2013 Edition of the California Building Code to read as follows:

2306.3 Wood-frame shear walls. Wood-frame shear walls shall be designed and constructed in accordance with AF&PA SDPWS. For structures assigned to Seismic Design Category D, E, or F, application of Tables 4.3A and 4.3B of AF&PA SDPWS shall include the following:

1. Wood structural panel thickness for shear walls shall not be less than 3/8 inch thick and studs shall not be spaced at more than 16 inches on center.
2. The maximum nominal unit shear capacities for 3/8 inch wood structural panels resisting seismic forces in structures assigned to Seismic Design Category D, E or F is 400 pounds per linear foot (plf).

Exception: Other nominal unit shear capacities may be permitted if such values are substantiated by cyclic testing and approved by the building official.

3. Where shear design values using allow 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 nominal member, or two 2-inch 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 Section 4.3.6.1 and 4.3.6.4.3 of AF&PA SDPWS for sill plate size and anchorage requirements.
4. Nails shall be placed not less than 1/2 inch in from the panel edges and not less than 3/8 inch 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 3/8 inch from panel edges and not less than 1/4 inch from the edge of the connecting members for shears of 350 plf or less using ASD or 500 plf or less using LRFD.
5. Table 4.3B 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 AF&PA 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 AF&PA SDPWS shall be met and the allowable shear values set forth in Table 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: 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 in 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 AF&PA SDPWS.

***Exception:** [DSA-SS 7DSA-SS/CC and OSHPD 1, 2 &4] Wood structural panel shear walls using staples as fasteners are not permitted by DSA and OSHPD.*

2307.2 Wood-frame shear walls. Wood-frame shear walls shall be designed and constructed in accordance with Section 2306.3 as applicable.

RATIONALE: The Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the damages to buildings and structures during the 1994 Northridge Earthquake recommended reducing allowable shear values in wood structural panel shear walls or diaphragms that were not substantiated by cyclic testing. That recommendation was consistent with a report to the Governor from the Seismic Safety Commission of the State of California recommending that code requirements be "more thoroughly substantiated with testing." The allowable shear values for wood structural panel shear walls or diaphragms fastened with stapled nails are based on monotonic testing and does not take into consideration that earthquake forces load shear wall or diaphragm in a repeating and fully reversible manner.

In September 2007, limited cyclic testing was conducted by a private engineering firm to determine if wood structural panels fastened with stapled nails would exhibit the same behavior as the wood structural panels fastened with common nails. The test result revealed that wood structural panel fastened with stapled nails appeared to be much lower in strength and stiffness than wood structural panels fastened with common nails. It was recommended that the use of stapled nail as fasteners for wood structural panel shear walls or diaphragms not be permitted to resist seismic forces in structures assigned to Seismic Design Category D, E and F unless it can be substantiated by cyclic testing.

Furthermore, the cities and county within the Los Angeles region has taken extra measures to maintain the structural integrity of the framing of shear walls and diaphragms designed for high levels of seismic forces by requiring wood sheathing be applied directly over the framing members and prohibiting the use of panels placed over gypsum sheathing. This proposed amendment is intended to prevent the

undesirable performance of nails when gypsum board softens due to cyclic earthquake displacements and the nail ultimately does not have any engagement in a solid material within the thickness of the gypsum board.

This proposed amendment continues the previous amendment adopted during the 2010 code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to place design and construction limits on stapled nail fasteners used in wood structural panel shear walls or diaphragms not substantiated with cyclic testing will help to maintain minimum quality of construction and performance standards of structures and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 23-07. Section 2308.3.4 of Chapter 23 of the 2013 Edition of the California Building Code is amended to read as follows:

2308.3.4 Braced wall line support. Braced wall lines shall be supported by continuous foundations.

Exception: For structures with a maximum plan dimension not over 50 feet (15240 mm), continuous foundations are required at exterior walls only for structures assigned to Seismic Design Category A, B, or C.

RATIONALE: With the higher seismic demand placed on buildings and structures in this region, interior walls can easily be called upon to resist over half of the seismic loading imposed on simple buildings or structures. Without a continuous foundation to support the braced wall line, seismic loads would be transferred through other elements such as non-structural concrete slab floors, wood floors, etc. The proposed change is to limit the use of the exception to structures assigned to Seismic Design Category A, B or C where lower seismic demands are expected. Requiring interior braced walls be supported by continuous foundations is intended to reduce or eliminate the poor performance of buildings or structures. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Conventional framing does not address the need for a continuous load path, critical shear transfer mechanisms, connection-ties, irregular and flexible portions of complex shaped structures. The proposed modification to require continuous footings under braced wall lines will improve performance of buildings or structure during a seismic event and therefore need to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 23-08. Section 2308.9.3.1, Section 2308.9.3.2 and Figure 2308.9.3.2 of the 2013 Edition of the California Building Code are amended to read as follow:

2308.9.3.1 Alternative bracing. Any bracing required by Section 2308.9.3 is permitted to be replaced by the following:

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 3/8-inch-minimum-thickness (9.5 mm) wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Table 2304.9.1 and blocked at wood structural panel edges. For structures assigned to Seismic Design Category D or E, each panel shall be sheathed

on one face with 15/32-inch-minimum-thickness (11.9 mm) wood structural panel sheathing nailed with 8d common nails spaced 3 inches on panel edges, 3 inches at intermediate supports. Two anchor bolts installed in accordance with Section 2308.6 shall be provided in each panel. Anchor bolts shall be placed at each panel outside quarter points. Each panel end stud shall have a tie-down device fastened to the foundation, capable of providing an approved uplift capacity of not less than 1,800 pounds (8006 N). The tie-down device shall be installed in accordance with the manufacturer's recommendations. The panels 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.

2. In the first story of two-story buildings, each wall panel shall be braced in accordance with Section 2308.9.3.1, Item 1, except that 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 not be less than 3,000 pounds (13 344 N).

2308.9.3.2 Alternate bracing wall panel adjacent to a door or window opening. Any bracing required by Section 2308.9.3 is permitted to be replaced by the following when used adjacent to a door or window opening with a full-length header:

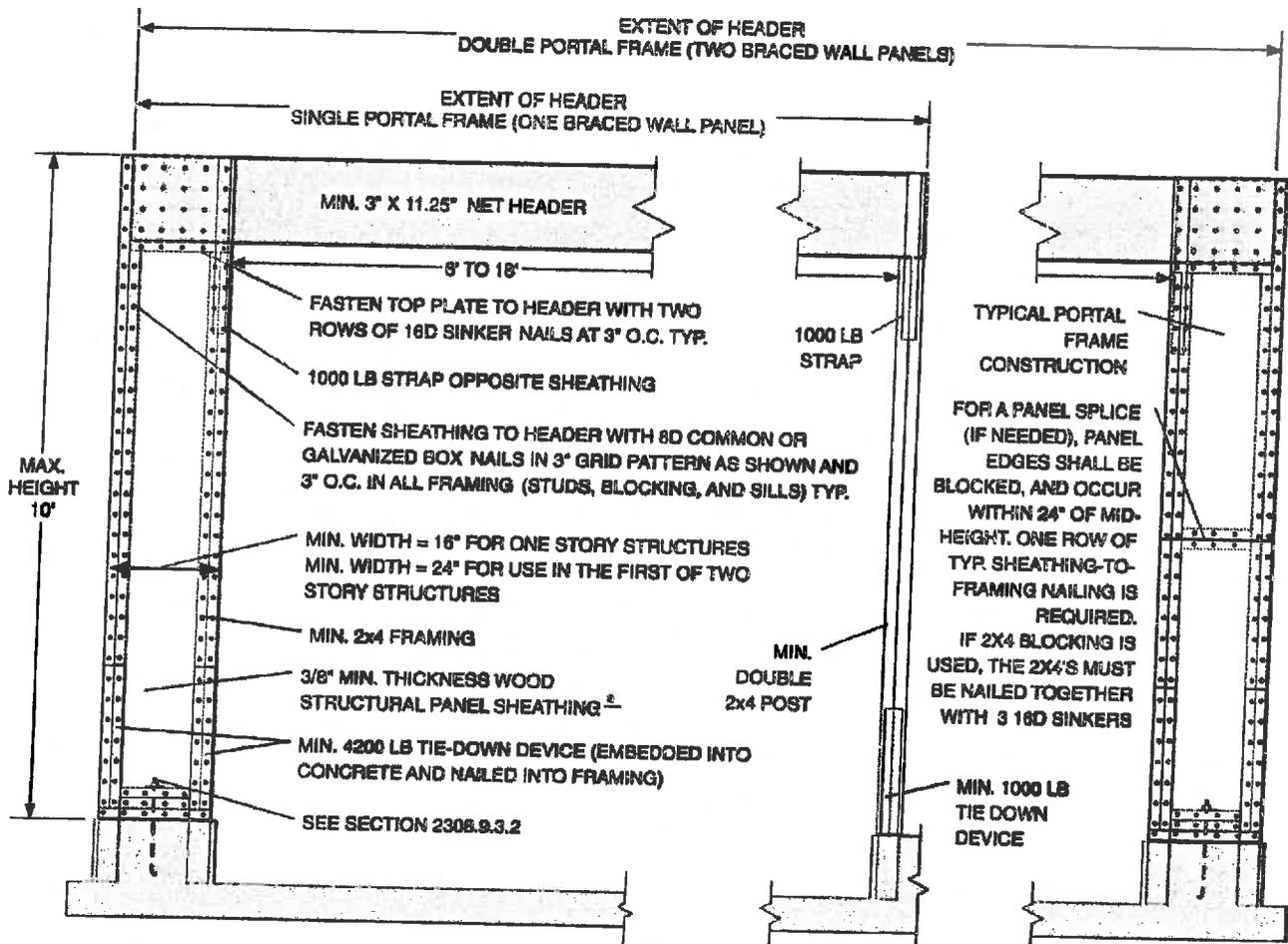
1. In one-story buildings, each panel shall have a length of not less than 16 inches (406 mm) and a height of not more than 10 feet (3048 mm). Each panel shall be sheathed on one face with a single layer of 3/8 inch (9.5 mm) minimum thickness wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Figure 2308.9.3.2. For structures assigned to Seismic Design Category D or E, each panel shall be sheathed on one face with 15/32-inch-minimum-thickness (11.9 mm) wood structural panel sheathing nailed with 8d common nails spaced 3 inches on panel edges, 3 inches at intermediate supports and in accordance with Figure 2308.9.3.2. The wood structural panel sheathing shall extend up over the solid sawn or glued-laminated header and shall be nailed in accordance with Figure 2308.9.3.2. A built-up header consisting of at least two 2 × 12s and fastened in accordance with Item 24 of Table 2304.9.1 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 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 (4,400 N) shall fasten the header to the inner studs opposite the sheathing. One anchor bolt not less than 5/8 inch (15.9 mm) diameter and installed in accordance with Section 2308.6 shall be provided in the center of each sill plate. The studs at each end of the panel shall have a tie-down device fastened to the foundation with an uplift capacity of not less than 4,200 pounds (18 480 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 also have a tie-down device fastened to the foundation with an uplift capacity of not less than 1,000 pounds (4400 N).

The tie-down devices shall be an embedded strap type, installed in accordance with the manufacturer's recommendations. The 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.

2. In the first story of two-story buildings, each wall panel shall be braced in accordance with Item 1



For SI: 1 foot = 304.8 mm; 1 inch = 25.4 mm; 1 pound = 4.448 N.

a. For structures assigned to Seismic Design Category D or E, sheathed on one face with 15/32-inch-minimum-thickness (11.9 mm) wood structural panel sheathing.

FIGURE 2308.9.3.2
ALTERNATE BRACED WALL PANEL ADJACENT TO A DOOR OR WINDOW OPENING

above, except that each panel shall have a length of not less than 24 inches (610 mm).

RATIONALE: 3/8" thick, 3 ply-plywood shear walls experienced many failures during the Northridge Earthquake. Box nails were observed to cause massive and multiple failures of the typical 3/8" thick 3-ply plywood during the Northridge Earthquake. This proposed amendment specifies minimum sheathing thickness, nail size and spacing so as to provide a uniform standard of construction for designers and buildings to follow. This is intended to improve the performance level of buildings and structures that are subject to the higher seismic demands and reduce and limit potential damages to property. This proposed amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance observed in 1994 Northridge Earthquake.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification requiring minimum sheathing thickness and nailing type and size will help to maintain minimum quality of construction and performance standards of structures and therefore needs to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 23-09. Table 2308.12.4 of the 2013 Edition of the California Building Code is amended to read as follows:

**TABLE 2308.12.4
WALL BRACING IN SEISMIC DESIGN CATEGORIES D AND E
(Minimum Percentage of Wall Bracing per each Braced Wall Line ^a)**

CONDITION	SHEATHING TYPE ^b	$S_{DS} < 0.50$	$0.50 \leq S_{DS} < 0.75$	$0.75 \leq S_{DS} \leq 1.00$	$S_{DS} > 1.00$
One Story	G-P ^c	43	59	75	100
	S-W ^d	21	32	37	48

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. Minimum length of panel bracing of one face of the wall for S-W sheathing shall be at least 4'-0" long or both faces of the wall for G-P sheathing shall be at least 8'-0" long; h/w ratio shall not exceed 2:1. For S-W panel bracing of the same material on two faces of the wall, the minimum length is permitted to be one-half the tabulated value but the h/w ratio shall not exceed 2:1 and design for uplift is required. The 2:1 h/w ratio limitation does not apply to alternate braced wall panels constructed in accordance with Section 2308.9.3.1 or 2308.9.3.2. Wall framing to which sheathing used for bracing is applied shall be nominal 2 inch wide [actual 1 1/2 inch (38 mm)] or larger members and spaced a maximum of 16 inches on center. Braced wall panel construction types shall not be mixed within a braced wall line.
- b. G-P = gypsum board, fiberboard, particleboard, lath and portland cement plaster or gypsum sheathing boards; S-W = wood structural panels and diagonal wood sheathing.
- c. Nailing as specified below shall occur at all panel edges at studs, at top and bottom plates and, where occurring, at blocking:
 For 1/2-inch gypsum board, 5d (0.113 inch diameter) cooler nails at 7 inches on center;
 For 5/8-inch gypsum board, No 11 gage (0.120 inch diameter) cooler nails at 7 inches on center;
 For gypsum sheathing board, 1-3/4 inches long by 7/16-inch head, diamond point galvanized nails at 4 inches on center;
 For gypsum lath, No. 13 gage (0.092 inch) by 1-1/8 inches long, 19/64-inch head, plasterboard at 5 inches on center;
 For Portland cement plaster, No. 11 gage (0.120 inch) by 1 1/2 inches long, 7/16-inch head at 6 inches on center;
~~For fiberboard and particleboard, No. 11 gage (0.120 inch) by 1 1/2 inches long, 7/16-inch head, galvanized nails at 3 inches on center.~~
- d. S-W sheathing shall be a minimum of 15/32" thick nailed with 8d common placed 3/8 inches from panel edges and spaced not more than 6 inches on center and 12 inches on center along intermediate framing members.

RATIONALE: This proposed amendment specifies minimum sheathing thickness and nail size and spacing so as to provide a uniform standard of construction for designers and buildings to follow. This is intended to improve the performance level of buildings and structures that are subject to the higher seismic demands placed on buildings or structure in this region. This proposed amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Conventional framing does not address the need for a continuous load path, critical shear transfer mechanisms, connection-ties, irregular and flexible portions of complex shaped structures. The proposed modification to provide specific detailing requirements will improve the performance of buildings and structures and therefore needs to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

2013 23-10. Section 2308.12.5 of the 2013 Edition of the California Building Code is amended to read as follows:

2308.12.5 Attachment of sheathing. Fastening of braced wall panel sheathing shall not be less than that prescribed in Table 2308.12.4 or 2304.9.1. Wall sheathing shall not be attached to framing members by adhesives. Staple fasteners in Table 2304.9.1 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 building official.

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 with four 8d nails per leg (total eight 8d nails per clip). Braced wall panels shall be laterally braced at each top corner and at maximum 24 inches (6096 mm) intervals along the top plate of discontinuous vertical framing.

RATIONALE: This proposed amendment is intended to improve the performance level of buildings and structures that are subject to the higher seismic demands placed on buildings or structure in this region. This proposed amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Conventional framing does not address the need for a continuous load path, critical shear transfer mechanisms, connection-ties, irregular and flexible portions of complex shaped structures. The proposed modification to provide specific detailing requirements will improve the performance of buildings and structures and therefore needs to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

PART II

BUILDING DIVISION AND FIRE DEPARTMENT RECOMMENDED AMENDMENTS TO THE 2013 EDITION OF THE CALIFORNIA RESIDENTIAL CODE

2013 R3-01. Section R301.1.3.2 of the 2013 Edition of the California Residential Code is amended to read as follows:

R301.1.3.2 Woodframe structures ~~greater than two stories~~. The building official shall require construction documents to be approved and stamped by a California licensed architect or engineer for all dwellings of woodframe construction more than two stories and basement in height located in Seismic Design Category A, B or C. Notwithstanding other sections of law; the law establishing these provisions is found in Business and Professions Code Section 5537 and 6737.1.

The building official shall require construction documents to be approved and stamped by a California licensed architect or engineer for all dwellings of woodframe construction more than one story in height or with a basement located in Seismic Design Category D₀, D₁, D₂ or E.

RATIONALE: After the 1994 Northridge Earthquake, the Wood Frame Construction Joint Task Force recommended that the quality of wood frame construction need to be greatly improved. One such recommendation identified by the Task Force is to improve the quality and organization of structural plans prepared by the engineer or architect so that plan examiners, building inspectors, contractors and special inspectors may logically follow and construct the presentation of the seismic force-resisting systems in the construction documents. For buildings or structures located in Seismic Design Category D₀, D₁, D₂ or E that are subject to a greater level of seismic forces, the requirement to have a California licensed architect or engineer prepare the construction documents is intended to minimize or reduce structural deficiencies that may cause excessive damage or injuries in wood frame buildings. Structural deficiencies such as plan and vertical irregularities, improper shear transfer of the seismic force-resisting system, missed details or connections important to the structural system, and the improper application of the prescriptive requirements of the California Residential Code can be readily addressed by a registered design professional.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to require construction documents for wood frame construction greater than one story in height or with a basement to be approved and stamped by a California licensed architect or engineer is intended to assure that both the structural design and prescriptive requirement of the code are properly utilized and presented and therefore need to be incorporated into the code to assure that new buildings and structures, and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R3-02. Section R301.1.4 is added to Chapter 3 of the 2013 Edition of the California Residential Code to read as follows:

R301.1.4 Seismic design provisions for buildings constructed on or into slopes steeper than one unit vertical in three units horizontal (33.3 percent slope). The design and construction of new buildings and additions to existing buildings when constructed on or into slopes steeper than one unit vertical in three units horizontal (33.3 percent slope) shall comply with Section 1613.9 of the Building Code.

RATIONALE: Due to the difficulty of fire suppression vehicles accessing winding and narrow hillside properties and the probabilities for future earthquakes in the Los Angeles region, this technical amendment is required to address the special needs for buildings constructed on hillside locations. A joint Structural Engineers Association of Southern California (SEAOSC) and both the Los Angeles County and Los Angeles City Task Force investigated the performance of hillside building failures after the Northridge earthquake. Numerous hillside failures resulted in loss of life and millions of dollars in damage. These

criteria were developed to minimize the damage to these structures and have been in use by both the City and County of Los Angeles for several years with much success. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles.

FINDINGS: Local Topographical and Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Additionally, the topography within the Los Angeles region includes significant hillsides with narrow and winding access that makes timely response by fire suppression vehicles challenging and difficult. The proposed modification establishes design parameters to better mitigate and limit property damage that are the results of increased seismic forces which are imparted upon hillside buildings and structures and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R03-03. Table R301.2.2.1.1 and Section R301.2.2.1.2 of the 2013 Edition of the California Residential Code are amended to read as follows:

**TABLE R301.2.2.1.1
SEISMIC DESIGN CATEGORY DETERMINATION**

CALCULATED S_{DS}	SEISMIC DESIGN CATEGORY
$S_{DS} \leq 0.17g$	A
$0.17g < S_{DS} \leq 0.33g$	B
$0.33g < S_{DS} \leq 0.50g$	C
$0.50g < S_{DS} \leq 0.67g$	D_0
$0.67g < S_{DS} \leq 0.83g$	D_1
$0.83g < S_{DS} \leq \del{1.25g} 1.00g$	D_2
$\del{1.25g} 1.00g < S_{DS}$	E

R301.2.2.1.2 Alternative determination of Seismic Design Category E. Buildings located in Seismic Design Category E in accordance with Figure R301.2(2) are permitted to be reclassified as being in Seismic Design Category D_2 provided one of the following is done:

1. A more detailed evaluation of the seismic design category is made in accordance with the provisions and maps of the *California Building Code*. Buildings located in Seismic Design Category E per Table R301.2.2.1.1, but located in Seismic Design Category D per the *California Building Code*, may be designed using the Seismic Design Category D_2 requirements of this code.
2. Buildings located in Seismic Design Category E that conform to the following additional restrictions are permitted to be constructed in accordance with the provisions for Seismic Design Category D_2 of this code:
 - 2.1. All exterior shear wall lines or *braced wall panels* are in one plane vertically from the foundation to the uppermost story.
 - 2.2. Floors shall not cantilever past the exterior walls.
 - 2.3. The building is within all of the requirements of Section R301.2.2.2.5 for being considered as regular.
 - 2.4. For buildings over one story in height, the calculated S_{DS} shall not exceed 1.25g.

RATIONALE: The purpose of this amendment is to revise the IRC short period design acceleration from 1.25g to 1.0g for SDC D_2 as ASCE7-10 limits the short period acceleration to 1.5g working out to S_{DS} of

1.0g; then to limit the S_{DS} to 1.25g for IRC SDC E structure reclassification. Currently, under ASCE 7-10, SDC D has a wide range from $0.50g \leq S_{DS}$ and that for regular structures S_s may be taken as 1.5g for calculating S_{DS} . This translates to setting a limit of $S_{DS} = 1.00g$ for regular structure based on ASCE 7. IRC places $S_{DS} > 1.25g$ into SDC E. However, under IRC, structures meeting the regular structure criteria may be re-classified as D_2 . The limit of 1.25g for the SDC E re-classification in IRC imposes a lower standard for irregular residential structures. This gives a disparity for the equal risk concept in the development of the ASCE 7-10 seismic hazard maps. ASCE 7-10 seismic hazard maps have also adjusted S_s and S_1 downward for parts of the middle and eastern United States between 2009 IRC and 2012 IRC.

The SDC D_2 limit in Table R301.2.2.1.1 is changed to $0.83g < S_{DS} \leq 1.00g$. This corresponds to the delineation to a limit of S_s of 1.5g for regular structure under ASCE 7-10. The added exception item 2.4 permits reclassification of SDC E to D_2 up to 1.25g. The associate risk for one- and two-family residential regular structure justifies the increase limit of S_{DS} . It is expected that structures beyond the limits set forth will be engineered under IBC provisions.

Reference

ASCE 7-10 Section 12.8.1.3 Maximum S_s Value in Determination of C_s

For regular structures five stories or less above the base as defined in Section 11.2 and with a period, T , of 0.5s or less, C_s is permitted to be calculated using a value of 1.5 for S_s .

ASCE 7-10 Section C12.8.1.3 Maximum S_s Value in Determination of C_s . The maximum value of S_s was created as hazard maps were revised in 1997. The cap on S_s reflects engineering judgment about performance of code-complying buildings in past earthquakes so the structural height, period, and regularity conditions required for use of the limit are very important qualifiers.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the 1994 Northridge Earthquake, the 1987 Whittier Narrows Earthquake, the 1971 San Fernando Earthquake and the 1933 Long Beach Earthquake. This amendment will improve the performance of buildings that otherwise may be designed and constructed in accordance with the CRC during a significant earthquake. This amendment is in accordance with the scope and objectives of the International Residential Code.

2013 R3-04. Items 1, 3 and 5 of Section R301.2.2.2.5 of the 2013 Edition of the California Residential Code are amended to read as follows:

1. When exterior shear wall lines or braced wall panels are not in one plane vertically from the foundation to the uppermost story in which they are required.

Exception: ~~For wood light frame construction, floors with cantilevers or setbacks not exceeding four times the nominal depth of the wood floor joists are permitted to support braced wall panels that are out of plane with braced wall panels below provided that:~~

- ~~1. Floor joists are nominal 2 inches by 10 inches (51 mm by 254 mm) or larger and spaced not more than 16 inches (406 mm) on center.~~
- ~~2. The ratio of the back span to the cantilever is at least 2 to 1.~~
- ~~3. Floor joists at ends of braced wall panels are doubled.~~
- ~~4. For wood frame construction, a continuous rim joist is connected at ends to all cantilever joists. When spliced, the rim joists shall be spliced using a galvanized metal tie not less than 0.058 inch (1.5 mm) (16 gage) and 1 1/2 inches (38 mm) wide fastened with six 16d nails on each side of the splice or a block of the same size as the rim joist of sufficient length to fit securely between the joist space at which the splice occurs fastened with eight 16d nails on each side of the splice; and~~

~~5. Gravity loads carried at the end of cantilevered joists are limited to uniform wall and roof loads and the reactions from headers having a span of 18 feet (2438 mm) or less.~~

3. ~~When the end of a braced wall panel occurs over an opening in the wall below and ends at a horizontal distance greater than 1 foot (305 mm) from the edge of the opening. This provision is applicable to shear walls and braced wall panels offset in plane and to braced wall panels offset out of plane as permitted by the exception to item 1 above.~~

~~**Exception:** For wood light frame wall construction, one end of a braced wall panel shall be permitted to extend more than one foot (305 mm) over an opening not more than 8 feet (2438 mm) wide in the wall below provided that the opening includes a header in accordance with the following:~~

- ~~1. The building width, loading condition and framing member species limitations of Table R502.5(1) shall apply; and~~
- ~~2. Not less than one 2x12 or two 2x10 for an opening not more than 4 feet (1219 mm) wide; or~~
- ~~3. Not less than two 2x12 or three 2x10 for an opening not more than 6 feet (1829 mm) wide; or~~
- ~~4. Not less than three 2x12 or four 2x10 for an opening not more than 8 feet (2438 mm) wide; and~~
- ~~5. The entire length of the braced wall panel does not occur over an opening in the wall below.~~

5. When portions of a floor level are vertically offset.

Exceptions:

- ~~1. Framing supported directly by continuous foundations at the perimeter of the building.~~
- ~~2. For wood light frame construction, floors shall be permitted to be vertically offset when the floor framing is lapped or tied together as required by section R502.6.1.~~

RATIONALE: With the higher seismic demand placed on buildings and structures in this region, precautionary steps are proposed to reduce or eliminate potential problems that may result by limiting the type of irregular conditions specified in the International Residential Code. Such limitations are intended to reduce the potential structural damage expected in the event of an earthquake. The cities and county of the Los Angeles region has taken extra measures to maintain the structural integrity of the framing of the shear walls and all associated elements when designed for high levels of seismic loads.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed amendment limits the type of irregular conditions within buildings that may lead to higher structural damage during a seismic event and therefore needs to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code and consistent with the requirements in the ASCE 7-10.

2013 R3-05. Section R301.2.2.3.8 is added to Chapter 3 of the 2013 Edition of the California Residential Code to read as follows:

R301.2.2.3.8 Anchorage of Mechanical, Electrical, or Plumbing Components and Equipment.
Mechanical, electrical, or plumbing components and equipment shall be anchored to the structure. Anchorage of the components and equipment shall be designed to resist loads in accordance with the International Building Code and ASCE 7, except where the component is positively attached to the

structure and flexible connections are provided between the component and associated ductwork, piping, and conduit; and either

1. The component weighs 400 lb (1,780 N) or less and has a center of mass located 4 ft (1.22 m) or less above the supporting structure; or
2. The component weighs 20 lb (89N) or less or, in the case of a distributed system, 5 lb/ft (73 N/m) or less.

RATIONALE: There is no limitation for weight of mechanical and plumbing fixtures and equipment in the International Residential Code. Requirements from ASCE 7 and the International Building Code would permit equipment weighing up to 400 lbs. when mounted at 4 feet or less above the floor or attic level without engineering design. Where equipment exceeds this requirement, it is the intent of this proposed amendment that a registered design professional be required to analyze if the floor support is adequate and structurally sound.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to limit the equipment weight is intended to reduce injuries, save lives, and minimize structural damages and therefore needs to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

§ 15.04.440 CHAPTER 3 AMENDED - BUILDING PLANNING.

Section R313.1 of the Residential Code is amended to read as follows:

R313.1 Where required. Approved automatic extinguishing systems shall be installed:

1. In all new R-2 occupancies.

Exceptions:

- A) Detached Group U occupancies, providing the floor area does not exceed 1000 square feet.
 - B) Other minor buildings and/or occupancies as approved by the Fire Chief.
2. Existing Group R-2 Occupancies in which an addition of at least 50 percent of the existing square footage takes place.

R313.1.1 Design and installation. Automatic residential sprinkler systems for R-2 occupancies shall be designed and installed in accordance with NFPA 13D or NFPA 13R as amended by the Monrovia Municipal Code.

RATIONALE: Text repeats residential fire sprinkler requirements for new and existing R-2 occupancies.

FINDINGS: Local climatic and geographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, and due to some older nonconforming buildings, it is necessary during the new construction or building renovation to use the City ordinance to control and minimize

conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion.

Section R313.2 of the Residential Code is amended to read as follows:

R313.2 One- and two-family dwelling automatic fire systems. Approved automatic extinguishing systems shall be installed:

1. In all new R-3 occupancies.

Exceptions:

- A) Detached Group U occupancies, providing the floor area does not exceed 1000 square feet.
 - B) Other minor buildings and/or occupancies as approved by the Fire Chief.
2. Existing Group R-3 Occupancies in which an addition of at least 50 percent of the existing square footage takes place.

R313.2.1 Design and installation. Automatic residential sprinkler systems for R-3 occupancies shall be designed and installed in accordance with NFPA 13D as amended by the Monrovia Municipal Code.

RATIONALE: Text repeats residential fire sprinkler requirements for new and existing R-3 occupancies.

FINDINGS: Local climatic and geographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, and due to some older nonconforming buildings, it is necessary during the new construction or building renovation to use the City ordinance to control and minimize conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion.

Section R313.3 of the Residential Code is deleted in its entirety and amended to read as follows:

R313.3 Dwelling unit fire sprinkler systems. Dwelling unit fire sprinkler systems shall be designed and installed in accordance with NFPA 13D or NFPA 13R as amended by this section.

R313.3.1 NFPA 13R Sprinkler systems. Where allowed in buildings of Group R, up to and including buildings four stories in height, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13R with the following additions:

1. Attics shall be fully sprinklered with quick-response intermediate temperature heads.
2. Private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area.
3. A single exterior bell activated by the waterflow switch shall be provided at an approved location.

R313.3.2 NFPA 13D Sprinkler systems. Where allowed, automatic sprinkler systems installed in one- and two-family dwellings shall be installed throughout in accordance with NFPA 13D with the following additions:

1. Attics containing forced air units shall have one or more quick-response intermediate temperature sprinkler heads adjacent to each unit.
2. Attached private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area.
3. Attics and basements used for storage purposes shall be fully sprinklered with residential type heads.
4. A single exterior bell activated by the waterflow switch shall be provided at an approved location.

RATIONALE: Section replaces fire sprinkler design requirements in California Residential Code with Fire Department design criteria. The exterior bell aids firefighting personnel to locate the structure where a fire sprinkler has activated.

FINDINGS: Local climatic and geographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, and due to some older nonconforming buildings, it is necessary during the new construction or building renovation to use the City ordinance to control and minimize conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion.

2013 R4-01. Section R401.1 of the 2013 Edition of the California Residential Code is amended to read as follows:

R401.1 Application. The provisions of this chapter shall control the design and construction of the foundation and foundation spaces for all buildings. In addition to the provisions of this chapter, the design and construction of foundations in areas prone to flooding as established by Table R301.2(1) shall meet the provisions of Section R322. Wood foundations shall be designed and installed in accordance with AF&PA PWF.

Exceptions: The provisions of this chapter shall be permitted to be used for wood foundations only in the following situations:

1. In buildings that have no more than two floors and a roof.
2. When interior basement and foundation walls are constructed at intervals not exceeding 50 feet (15 240 mm).

Wood foundations in Seismic Design Category D₀, D₁ or D₂ shall ~~be designed in accordance with accepted engineering practice not be permitted.~~

Exception: In non-occupied, single-story, detached storage sheds and similar uses other than carport or garage, provided the gross floor area does not exceed 200 square feet, the plate height does not exceed 12 feet in height above the grade plane at any point, and the maximum roof projection does not exceed 24 inches.

RATIONALE: No substantiating data has been provided to show that wood foundation is effective in supporting buildings and structures during a seismic event while being subject to deterioration caused by the combined detrimental effect of constant moisture in the soil and wood-destroying organisms. Wood foundation, when they are not properly treated and protected against deterioration, have performed very poorly and have led to slope failures. Most contractors are typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic event and wet applications. The proposed amendment takes the precautionary steps to reduce or eliminate potential problems that may result in using wood foundation that experience relatively rapid decay due to the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms. However, an exception is made for non-occupied, single-story storage structures that pose significantly less risk to human safety and may utilize the wood foundation guidelines specified in this Chapter. This proposed amendment is a continuation of an amendment adopted during previous code adoption cycles for the California Residential Code.

FINDINGS: Local Climatic and Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. In addition, the region is within a climate system capable of producing major winds, fire and rain related disasters, including but not limited to those caused by the Santa Ana winds and El Nino (or La Nina) subtropical-like weather. This region is especially susceptible to more active termite and wood attacking insects and microorganisms. The proposed modification to prohibit the use of wood foundation systems as well as limit prescriptive design provisions in an effort to mitigate potential problems or deficiencies due to the proliferation of wood-destroying organisms and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R4-02. Sections R403.1.2, R403.1.3 and R403.1.5 of the 2013 Edition of the California Residential Code are amended to read as follows:

R403.1.2 Continuous footing in Seismic Design Categories D₀, D₁ and D₂. The braced wall panels at exterior walls of buildings located in Seismic Design Categories D₀, D₁ and D₂ shall be supported by continuous footings. All required interior braced wall panels in buildings with plan dimensions greater than 50 feet (15240 mm) shall also be supported by continuous footings.

R403.1.3 Seismic reinforcing. Concrete footings located in Seismic Design Categories D₀, D₁ and D₂, as established in Table R301.2(1), shall have minimum reinforcement. Bottom reinforcement shall be located a minimum of 3 inches (76 mm) clear from the bottom of the footing.

In Seismic Design Categories D₀, D₁ and D₂ where construction joint is created between a concrete footing and a stem wall, a minimum of one No. 4 bar shall be installed at not more than 4 feet (1219 mm) on center. The vertical bar shall extend to 3 inches (76 mm) clear of the bottom of the footing, have a standard hook and extend a minimum of 14 inches (357 mm) into the stem wall.

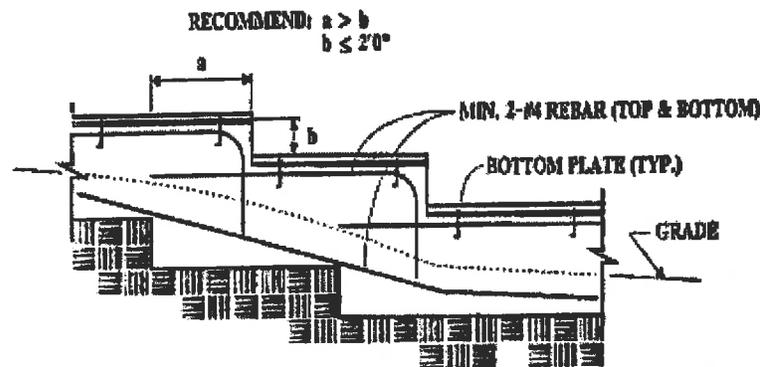
In Seismic Design Categories D₀, D₁ and D₂ where a grouted masonry stem wall is supported on a concrete footing and stem wall, a minimum of one No. 4 bar shall be installed at not more than 4 feet (1219 mm) on center. The vertical bar shall extend to 3 inches (76 mm) clear of the bottom of the footing and have a standard hook.

In Seismic Design Categories D₀, D₁ and D₂ masonry stem walls without solid grout and vertical reinforcing are not permitted.

Exception: In detached one- and two-family dwellings located in Seismic Design Category A, B or C which are three stories or less in height and constructed with stud bearing walls, isolated plain concrete footings, supporting columns or pedestals are permitted.

R403.1.5 Slope. 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 located in Seismic Design Categories D₀, D₁ or D₂, stepped footings shall be reinforced with four No. 4 rebar. Two bars shall be placed at the top and bottom of the footings as shown in Figure R403.1.5.



STEPPED FOUNDATIONS

**FIGURE R403.1.5
STEPPED FOOTING**

RATIONALE: With the higher seismic demand placed on buildings and structures in this region, precautionary steps are proposed to reduce or eliminate potential problems that may result for under-reinforced footings located on sloped surfaces. Requiring minimum reinforcement for stepped footings is intended to address the problem of poor performance of plain or under-reinforced footings during a seismic event. Furthermore, interior walls can easily be called upon to resist over half of the seismic loading imposed on simple buildings or structures. Without a continuous foundation to support the braced wall line, seismic loads would be transferred through other elements such as non-structural concrete slab floors, wood floors, etc. The proposed change is to limit the use of the exception to structures assigned to Seismic Design Category A, B or C where lower seismic demands are expected. Requiring interior braced walls be supported by continuous foundations is intended to reduce or eliminate the poor performance of buildings or structures. This proposed amendment is consistent with an amendment adopted during previous code adoption cycles for the California Residential Code.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to require continuous footings under braced wall lines, require reinforcement in one- and two-family dwelling, and minimum reinforcement in stepped footings will improve performance of buildings or structure during a seismic event and minimize potential problems or deficiencies and therefore need to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R4-03. Section R404.2 of the 2013 Edition of the California Residential Code is amended to read as follows:

R404.2 Wood foundation walls. Wood foundation walls shall be constructed in accordance with the provisions of Sections R404.2.1 through R404.2.6 and with the details shown in Figures R403.1(2) and R403.1(3). Wood foundation walls shall not be used for structures located in Seismic Design Category D₀, D₁ or D₂.

RATIONALE: No substantiating data has been provided to show that wood foundation wall is effective in supporting buildings and structures during a seismic event while being subject to deterioration caused by the combined detrimental effect of constant moisture in the soil and wood-destroying organisms. Wood foundation walls, when they are not properly treated and protected against deterioration, have performed very poorly and have led to slope failures. Most contractors are typically accustomed to construction in dry and temperate weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for both seismic event and wet applications. The proposed amendment takes the precautionary steps to reduce or eliminate potential problems that may result in using wood foundation walls that experience relatively rapid decay due to the fact that the region does not experience temperatures cold enough to destroy or retard the growth and proliferation of wood-destroying organisms. This proposed amendment is consistent with an amendment adopted during previous code adoption cycles for the California Residential Code.

FINDINGS: Local Climatic and Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. In addition, the region is within a climate system capable of producing major winds, fire and rain related disasters, including but not limited to those caused by the Santa Ana winds and El Nino (or La Nina) subtropical-like weather. This region is especially susceptible to more active termite and wood attacking insects and microorganisms. The proposed modification to prohibit the use of wood foundation wall in an effort to mitigate potential problems or deficiencies due to the proliferation of wood-destroying organisms and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R5-01. Section R501.1 of the 2013 Edition of the California Residential Code is amended to read as follows:

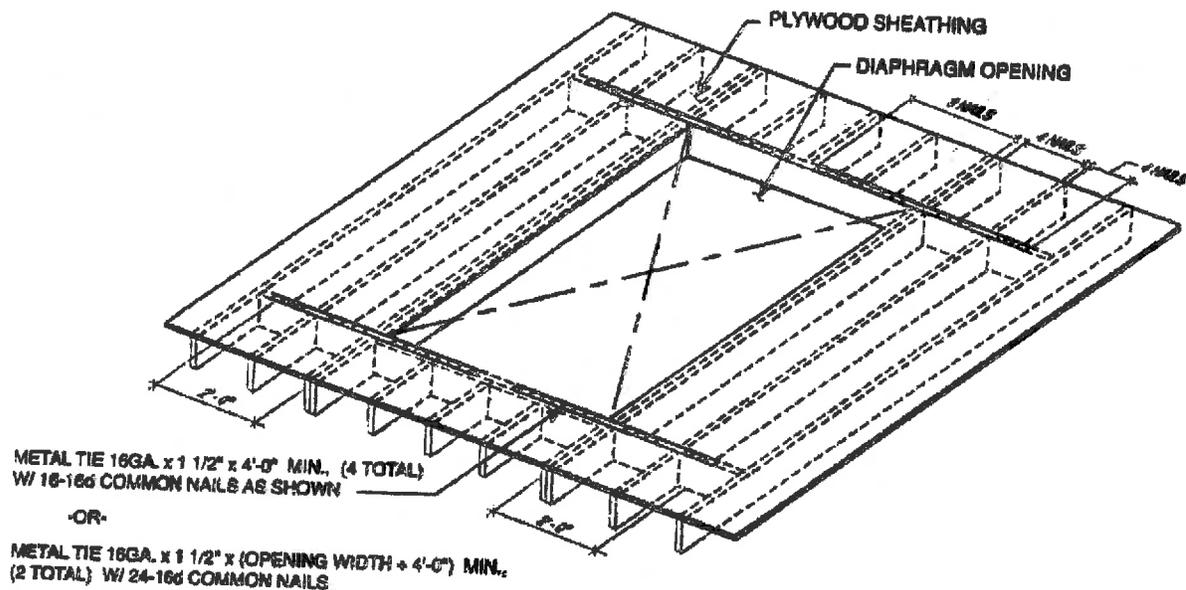
R501.1 Application. The provisions of this chapter shall control the design and construction of the floors for all buildings including the floors of attic spaces used to house mechanical or plumbing fixtures and equipment. Mechanical or plumbing fixtures and equipment shall be attached (or anchored) to the structure in accordance with Section R301.2.2.3.8

RATIONALE: There is no limitation for weight of mechanical and plumbing fixtures and equipment in the International Residential Code. Requirements from ASCE 7 and the International Building Code would permit equipment weighing up to 400 lbs. when mounted at 4 feet or less above the floor or attic level without engineering design. Where equipment exceeds this requirement, it is the intent of this proposed amendment that a registered design professional is required to analyze if the floor support is adequate and structurally sound.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to limit the equipment weight is intended to reduce injuries, save lives, and minimize structural damages and therefore needs to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R5-02. Section R503.2.4 is added to Chapter 5 of the 2013 Edition of the California Residential Code to read as follows:

R503.2.4 Openings in horizontal diaphragms. Openings in horizontal diaphragms with a dimension perpendicular to the joist that is greater than 4 feet (1.2 m) shall be constructed in accordance with Figure R503.2.4.



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

- a. Blockings shall be provided beyond headers.
- b. Metal ties not less than 0.058 inch [1.47 mm (16 galvanized gage)] by 1.5 inches (38 mm) wide with eight 16d common nails on each side of the header-joint intersection. The metal ties shall have a minimum yield of 33,000 psi (227 MPa).
- c. Openings in diaphragms shall be further limited in accordance with Section R301.2.2.2.5.

FIGURE R503.2.4 **OPENINGS IN HORIZONTAL DIAPHRAGMS**

RATIONALE: Section R502.10 of the Code does not provide any prescriptive criteria to limit the maximum floor opening size nor does Section R503 provide any details to address the issue of shear transfer near larger floor openings. With the higher seismic demand placed on buildings and structures in this region, it is important to ensure that a complete load path is provided to reduce or eliminate potential damages caused by seismic forces. Requiring blocking with metal ties around larger floor openings and limiting opening size is consistent with the requirements of Section R301.2.2.2.5.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to require specific detailing at large floor openings is intended to address the poor performance of floor diaphragms with openings and limit or reduce property damages during a seismic event and therefore needs to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R6-01. Lines 37 and 38 of Table R602.3(1) of the 2013 Edition of the California Residential Code are amended to read as follows:

TABLE R602.3(1)—continued
FASTENER SCHEDULE FOR STRUCTURAL MEMBERS

ITEM	DESCRIPTION OF BUILDING MATERIALS	DESCRIPTION OF FASTENER ^{a, b}	SPACING OF FASTENERS	
			Edges (inches) ^c	Intermediate supports ^{d, e} (inches)
Wood structural panels, subfloor, roof and interior wall sheathing to framing and particleboard wall sheathing to framing				
32	$\frac{3}{4}$ " - $\frac{1}{2}$ "	6d common (2" x 0.113") nail (subfloor wall) ^f 8d common (2½" x 0.131") nail (roof) ^f	6	12 ^g
33	$\frac{1\frac{1}{2}}$ " - 1"	8d common nail (2½" x 0.131")	6	12 ^g
34	$1\frac{1}{4}$ " - $1\frac{1}{4}$ "	10d common (3" x 0.148") nail or 8d (2½" x 0.131") deformed nail	6	12
Other wall sheathing^h				
35	$\frac{1}{2}$ " structural cellulose fiberboard sheathing	1½" galvanized roofing nail, $\frac{7}{16}$ " crown or 1" crown staple 16 ga., 1½" long	3	6
36	$\frac{5}{16}$ " structural cellulose fiberboard sheathing	1¾" galvanized roofing nail, $\frac{7}{16}$ " crown or 1" crown staple 16 ga., 1½" long	3	6
37 ^k	$\frac{1}{2}$ " gypsum sheathing ^d	1½" galvanized roofing nail; staple galvanized, 1½" long; 1½" screws, Type W or S	7	7
38 ^k	$\frac{5}{8}$ " gypsum sheathing ^d	1¾" galvanized roofing nail; staple galvanized, 1¾" long; 1¾" screws, Type W or S	7	7
Wood structural panels, combination subfloor underlayment to framing				
39	$\frac{3}{4}$ " and less	6d deformed (2" x 0.120") nail or 8d common (2½" x 0.131") nail	6	12
40	$\frac{7}{8}$ " - 1"	8d common (2½" x 0.131") nail or 8d deformed (2½" x 0.120") nail	6	12
41	$1\frac{1}{8}$ " - $1\frac{1}{4}$ "	10d common (3" x 0.148") nail or 8d deformed (2½" x 0.120") nail	6	12

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s; 1 Ksi = 6.895 MPa.

- a. All nails are smooth-common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less.
- b. Staples are 16 gage wire and have a minimum $\frac{7}{16}$ -inch on diameter crown width.
- c. Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.
- d. Four-foot by 8-foot or 4-foot by 9-foot panels shall be applied vertically.
- e. Spacing of fasteners not included in this table shall be based on Table R602.3(2).
- f. For regions having basic wind speed of 110 mph or greater, 8d deformed (2½" x 0.120") nails shall be used for attaching plywood and wood structural panel roof sheathing to framing within minimum 48-inch distance from gable end walls, if mean roof height is more than 25 feet, up to 35 feet maximum.
- g. For regions having basic wind speed of 100 mph or less, nails for attaching wood structural panel roof sheathing to gable end wall framing shall be spaced 6 inches on center. When basic wind speed is greater than 100 mph, nails for attaching panel roof sheathing to intermediate supports shall be spaced 6 inches on center for minimum 48-inch distance from ridges, eaves and gable end walls; and 4 inches on center to gable end wall framing.
- h. Gypsum sheathing shall conform to ASTM C 1396 and shall be installed in accordance with GA 253. Fiberboard sheathing shall conform to ASTM C 208.
- i. Spacing of fasteners on floor sheathing panel edges applies to panel edges supported by framing members and required blocking and at all floor perimeters only. Spacing of fasteners on roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.
- j. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule, provide two toe nails on one side of the rafter and toe nails from the ceiling joist to top plate in accordance with this schedule. The toe nail on the opposite side of the rafter shall not be required.
- k. Use of staples in braced wall panels shall be prohibited in Seismic Design Category D0, D1, or D2.

RATIONALE: The Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the damages to buildings and structures during the 1994 Northridge Earthquake recommended reducing allowable shear values in wood structural panel shear walls or diaphragms that were not substantiated by cyclic testing. That recommendation was consistent with a report to the Governor from the Seismic Safety Commission of the State of California recommending that code requirements be "more thoroughly substantiated with testing." The allowable shear values for wood structural panel shear walls or diaphragms fastened with staples are based on monotonic testing and does not take into consideration that earthquake forces load shear wall or diaphragm in a repeating and fully reversible manner.

In September 2007, limited cyclic testing was conducted by a private engineering firm to determine if wood structural panels fastened with staples would exhibit the same behavior as the wood structural panels fastened with common nails. The test result revealed that wood structural panel fastened with staples appeared to be much lower in strength and stiffness than wood structural panels fastened with

common nails. It was recommended that the use of staples as fasteners for wood structural panel shear walls or diaphragms not be permitted to resist seismic forces in structures assigned to Seismic Design Category D₀, D₁ and D₂ unless it can be substantiated by cyclic testing.

This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to place design and construction limits on staples as fasteners used in wood structural panel or diaphragms not substantiated with cyclic testing will help to maintain minimum quality of construction and performance standards of structures and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R6-02. Footnote “b” of Table R602.3(2) of the 2013 Edition of the California Residential Code is amended to read as follows:

b. Staples shall have a minimum crown width of 7/16-inch on diameter except as noted. Use of staples in roof, floor, subfloor, and braced wall panels shall be prohibited in Seismic Design Category D₀, D₁, or D₂.

RATIONALE: The Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the damages to buildings and structures during the 1994 Northridge Earthquake recommended reducing allowable shear values in wood structural panel shear walls or diaphragms that were not substantiated by cyclic testing. That recommendation was consistent with a report to the Governor from the Seismic Safety Commission of the State of California recommending that code requirements be “more thoroughly substantiated with testing.” The allowable shear values for wood structural panel shear walls or diaphragms fastened with staples are based on monotonic testing and does not take into consideration that earthquake forces load shear wall or diaphragm in a repeating and fully reversible manner.

In September 2007, limited cyclic testing was conducted by a private engineering firm to determine if wood structural panels fastened with staples would exhibit the same behavior as the wood structural panels fastened with common nails. The test result revealed that wood structural panel fastened with staples appeared to be much lower in strength and stiffness than wood structural panels fastened with common nails. It was recommended that the use of staples as fasteners for wood structural panel shear walls or diaphragms not be permitted to resist seismic forces in structures assigned to Seismic Design Category D₀, D₁ and D₂ unless it can be substantiated by cyclic testing.

This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to place design and construction limits on staples as fasteners used in wood structural panel or diaphragms not substantiated with cyclic testing will help to maintain minimum quality of construction and performance standards of structures and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R6-03. Table R602.10.3(3) of the 2013 Edition of the California Residential Code is amended to read as follows:

**TABLE R602.10.3(3)
BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY**

<ul style="list-style-type: none"> • SOIL CLASS D^a • WALL HEIGHT = 10 FEET • 10 PSF FLOOR DEAD LOAD • 15 PSF ROOF/CEILING DEAD LOAD • BRACED WALL LINE SPACING ≤ 25 FEET 			MINIMUM TOTAL LENGTH (FEET) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE ^b				
Seismic Design Category	Story Location	Braced Wall Line Length (feet)	Method L1 ^b	Method GB ¹	Methods DWB, SFB, PBS, PCP, HPS, CS-SFB ^{1,2}	Method WSP	Methods CS-WSP, CS-Q
C (townhouses only)		10	2.5	2.5	2.5	1.6	1.4
		20	5.0	5.0	5.0	3.2	2.7
		30	7.5	7.5	7.5	4.8	4.1
		40	10.0	10.0	10.0	6.4	5.4
		50	12.5	12.5	12.5	8.0	6.8
		10	NP	4.5	4.5	3.0	2.6
		20	NP	9.0	9.0	6.0	5.1
		30	NP	13.5	13.5	9.0	7.7
		40	NP	18.0	18.0	12.0	10.2
		50	NP	22.5	22.5	15.0	12.8
		10	NP	6.0	6.0	4.5	3.8
		20	NP	12.0	12.0	9.0	7.7
		30	NP	18.0	18.0	13.5	11.5
		40	NP	24.0	24.0	18.0	15.3
		50	NP	30.0	30.0	22.5	19.1
D ₀		10	NP	2.8 5.6	2.8 5.6	1.8	1.6
		20	NP	5.5 11.0	5.5 11.0	3.6	3.1
		30	NP	8.3 16.6	8.3 16.6	5.4	4.6
		40	NP	11.0 22.0	11.0 22.0	7.2	6.1
		50	NP	13.8 27.6	13.8 27.6	9.0	7.7
		10	NP	5.3 NP	5.3 NP	3.8	3.2
		20	NP	10.5 NP	10.5 NP	7.5	6.4
		30	NP	15.8 NP	15.8 NP	11.3	9.6
		40	NP	21.0 NP	21.0 NP	15.0	12.8
		50	NP	26.3 NP	26.3 NP	18.8	16.0
		10	NP	7.3 NP	7.3 NP	5.3	4.5
		20	NP	14.5 NP	14.5 NP	10.5	9.0
		30	NP	21.8 NP	21.8 NP	15.8	13.4
		40	NP	29.0 NP	29.0 NP	21.0	17.9
		50	NP	36.3 NP	36.3 NP	26.3	22.3

(continued)

TABLE R602.10.3(3)—continued
BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY

SOIL CLASS D _s WALL HEIGHT = 10 FEET 10 PSF FLOOR DEAD LOAD 15 PSF ROOF/CEILING DEAD LOAD BRACED WALL LINE SPACING ≤ 25 FEET			MINIMUM TOTAL LENGTH (FEET) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE ^a				
Seismic Design Category	Story Location	Braced Wall Line Length (feet)	Method LFB ^b	Method GB ^c	Methods DWB, SFB, PBS, PCP, HPS, CS- SFB ^{d,e}	Method WSP	Methods CS-WSP, CS-G
D ₁		10	NP	3.0 8.0	3.0 8.0	2.0	1.7
		20	NP	6.0 12.0	6.0 12.0	4.0	3.4
		30	NP	9.0 18.0	9.0 18.0	6.0	5.1
		40	NP	12.0 24.0	12.0 24.0	8.0	6.8
		50	NP	15.0 30.0	15.0 30.0	10.0	8.5
		10	NP	6.0 NP	6.0 NP	4.5	3.8
		20	NP	12.0 NP	12.0 NP	9.0	7.7
		30	NP	18.0 NP	18.0 NP	13.5	11.5
		40	NP	24.0 NP	24.0 NP	18.0	15.3
		50	NP	30.0 NP	30.0 NP	22.5	19.1
		10	NP	8.5 NP	8.5 NP	6.0	5.1
		20	NP	17.0 NP	17.0 NP	12.0	10.2
		30	NP	25.5 NP	25.5 NP	18.0	15.3
		40	NP	34.0 NP	34.0 NP	24.0	20.4
		50	NP	42.5 NP	42.5 NP	30.0	25.5
D ₂		10	NP	4.0 8.0	4.0 8.0	2.5	2.1
		20	NP	8.0 16.0	8.0 16.0	5.0	4.3
		30	NP	12.0 24.0	12.0 24.0	7.5	6.4
		40	NP	16.0 32.0	16.0 32.0	10.0	8.5
		50	NP	20.0 40.0	20.0 40.0	12.5	10.6
		10	NP	7.5 NP	7.5 NP	5.5	4.7
		20	NP	15.0 NP	15.0 NP	11.0	9.4
		30	NP	22.5 NP	22.5 NP	16.5	14.0
		40	NP	30.0 NP	30.0 NP	22.0	18.7
		50	NP	37.5 NP	37.5 NP	27.5	23.4
		10	NP	NP	NP	NP	NP
		20	NP	NP	NP	NP	NP
		30	NP	NP	NP	NP	NP
		40	NP	NP	NP	NP	NP
		50	NP	NP	NP	NP	NP
	Cripple wall below one- or two-story dwelling	10	NP	NP	NP	7.5	6.4
		20	NP	NP	NP	15.0	12.8
		30	NP	NP	NP	22.5	19.1
40		NP	NP	NP	30.0	25.5	
50		NP	NP	NP	37.5	31.9	

For SI: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 pound per square foot = 0.0479 kPa.

a. Linear interpolation shall be permitted.

b. Wall bracing lengths are based on a soil site class "D." Interpolation of bracing length between the S_w values associated with the Seismic Design Categories shall be permitted when a site-specific S_w value is determined in accordance with Section 1613.3 of the *International Building Code*.

c. Method LIB shall have gypsum board fastened to at least one side with nails or screws per Table R602.3(1) for exterior sheathing or Table R702.3.5 for interior gypsum board. Spacing of fasteners at panel edges shall not exceed 8 inches.

d. Method CS-SFB applies in SDC C only.

e. Methods GB and PCP braced wall panel h/w ratio shall not exceed 1:1 in SDC D0, D1 or D2. Methods DWB, SFB, PBS, and HPS are not permitted in SDC D0, D1, or D2.

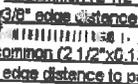
RATIONALE: Due to the high geologic activities in the Southern California area and the expected higher level of performance on buildings and structures, this proposed local amendment increase the length and limits the location where shear walls sheathed with lath, plaster or gypsum board are used in multi-level buildings. In addition, shear walls sheathed with other materials are prohibited in Seismic Design Category D₀, D₁ and D₂ to be consistent with the design limitation for similar shear walls found in the California Building Code. The poor performance of such shear walls in the 1994 Northridge Earthquake was investigated by the Structural Engineers Association of Southern California (SEAOSC) and the Los

Angeles City Task Force and formed the basis for this proposed amendment. Considering that shear walls sheathed with lath, plaster or gypsum board are less ductile than steel moment frames or wood structural panel shear walls, the cities and county of the Los Angeles region has taken the necessary measures to limit the potential structural damage that may be caused by the use of such walls at the lower level of multi-level building that are subject to higher levels of seismic loads. This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to increase the length and limit the location where shear walls sheathed with lath, plaster or gypsum board are used will help to ensure that multi-level building will reach its performance objective in resisting higher levels of seismic loads and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

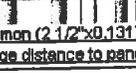
2013 R6-04. Table R602.10.4 of the 2013 Edition of the California Residential Code is amended to read as follows:

TABLE R602.10.4
BRACING METHODS 1

METHODS, MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA ^a			
			Fasteners	Spacing		
Increment Bracing Method	LDB Let-in-bracing	1 x 4 wood or approved metal straps at 45° to 60° angles for maximum 16" stud spacing		Wood: 2-8d common nails or 3-8d (2 1/2" long x 0.113" dia.) nails Metal strap: per manufacturer	Wood: per stud and top and bottom plates Metal: per manufacturer	
	DWB Diagonal wood boards	1/4" (1" nominal) for maximum 24" stud spacing		2-8d (2 1/2" long x 0.113" dia.) nails or 2 - 1 1/2" long staples	Per stud	
	WSP Wood structural panel (See Section R604)	$\frac{3/4"}{15/32"}$		8d common (2 1/2" x 0.131") nails 3/8" edge distance to panel edge 8d common (2 1/2" x 0.131") nails 3/8" edge distance to panel edge	Exterior sheathing per Table R602.3(3) Interior sheathing per Table R602.3(1) or R602.3(2)	6" edges 12" field Varies by fastener 6" edges 12" field
	BV-WSP Wood Structural Panels with Stone or Masonry Veneer (See Section R602.10.6.5)	7/16"	See Figure R602.10.6.5	8d common (2 1/2" x 0.131") nails	4" at panel edges 12" at intermediate supports 4" at braced wall panel end posts	
	SFB Structural fiberboard sheathing	1/2" or 2 5/32" for maximum 16" stud spacing		1 1/2" long x 0.12" dia. (for 1/2" thick sheathing) 1 3/4" long x 0.12" dia. (for 2 5/32" thick sheathing) galvanized roofing nails or 8d common (2 1/2" long x 0.131" dia.) nails	3" edges 6" field	
	GB Gypsum board	1/2"		Nails or screws per Table R602.3(1) for exterior locations Nails or screws per Table R702.3.5 for interior locations	For all braced wall panel locations: 7" edges (including top and bottom plates) 7" field	
	PBS Particleboard sheathing (See Section R605)	3/8" or 1/2" for maximum 16" stud spacing		For 3/8", 6d common (2" long x 0.113" dia.) nails For 1/2", 8d common (2 1/2" long x 0.131" dia.) nails	3" edges 6" field	
	PCP Portland cement plaster	See Section R703.6 for maximum 16" stud spacing		1 1/2" long, 11 gage, 7/16" dia. head nails or 7/8" long, 16 gage staples ^a	6" o.c. on all framing members	
	HPS Hardboard panel siding	7/16" for maximum 16" stud spacing		0.092" dia., 0.225" dia. head nails with length to accommodate 1 1/2" penetration into studs	4" edges 8" field	
	ABW Alternate braced wall	3/8"		See Section R602.10.6.1	See Section R602.10.6.1	

(continued)

TABLE R602.10.4—continued
BRACING METHODS¹

METHODS, MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA ^a	
			Fasteners	Spacing
Intermittent Bracing Methods	PFR Portal frame with hold-downs		See Section R602.10.6.2	See Section R602.10.6.2
	PFG Portal frame at garage		See Section R602.10.6.3	See Section R602.10.6.3
Continuous Sheathing Methods	CS-WSP Continuously sheathed wood structural panel		8d common (2 1/2" x 0.131") nails 3/8" edge distance to panel edge Exterior sheathing per Table R602.3(3)	6" edges 12" field
	CS-G ^{b,c} Continuously sheathed wood structural panel adjacent to garage openings		See Method CS-WSP	See Method CS-WSP
	CS-PF Continuously sheathed portal frame		See Section R602.10.6.4	See Section R602.10.6.4
	CS-SFB ^d Continuously sheathed structural fiberboard		1 1/2" long x 0.12" dia. (for 1/2" thick sheathing) 1 3/4" long x 0.12" dia. (for 5/32" thick sheathing) galvanized roofing nails or 8d common (2 1/2" long x 0.131" dia.) nails	3" edges 6" field

For SF: 1 inch = 25.4 mm, 1 foot = 305 mm, 1 degree = 0.0175 rad, 1 pound per square foot = 47.8 N/m², 1 mile per hour = 0.447 m/s.

- Adhesive attachment of wall sheathing, including Method GB, shall not be permitted in Seismic Design Categories C, D₀, D₁ and D₂.
 - Applies to panels next to garage door opening when supporting gable end wall or roof load only. May only be used on one wall of the garage. In Seismic Design Categories D₀, D₁ and D₂, roof covering dead load may not exceed 3 psf.
 - Garage openings adjacent to a Method CS-G panel shall be provided with a header in accordance with Table R502.5(1). A full height clear opening shall not be permitted adjacent to a Method CS-G panel.
 - Method CS-SFB does not apply in Seismic Design Categories D₀, D₁ and D₂ and in areas where the wind speed exceeds 100 mph.
 - Method applies to detached one- and two-family dwellings in Seismic Design Categories D₃ through D₄ only.
- ¹ Methods GB and PCP braced wall panel h/w ratio shall not exceed 1:1 in SDC D₀, D₁ or D₂. Methods LB, DWB, SFB, PPS, HPS, and PFG are not permitted in SDC D₀, D₁ or D₂.
- ² Use of staples in braced wall panels shall be prohibited in SDC D₀, D₁ or D₂.

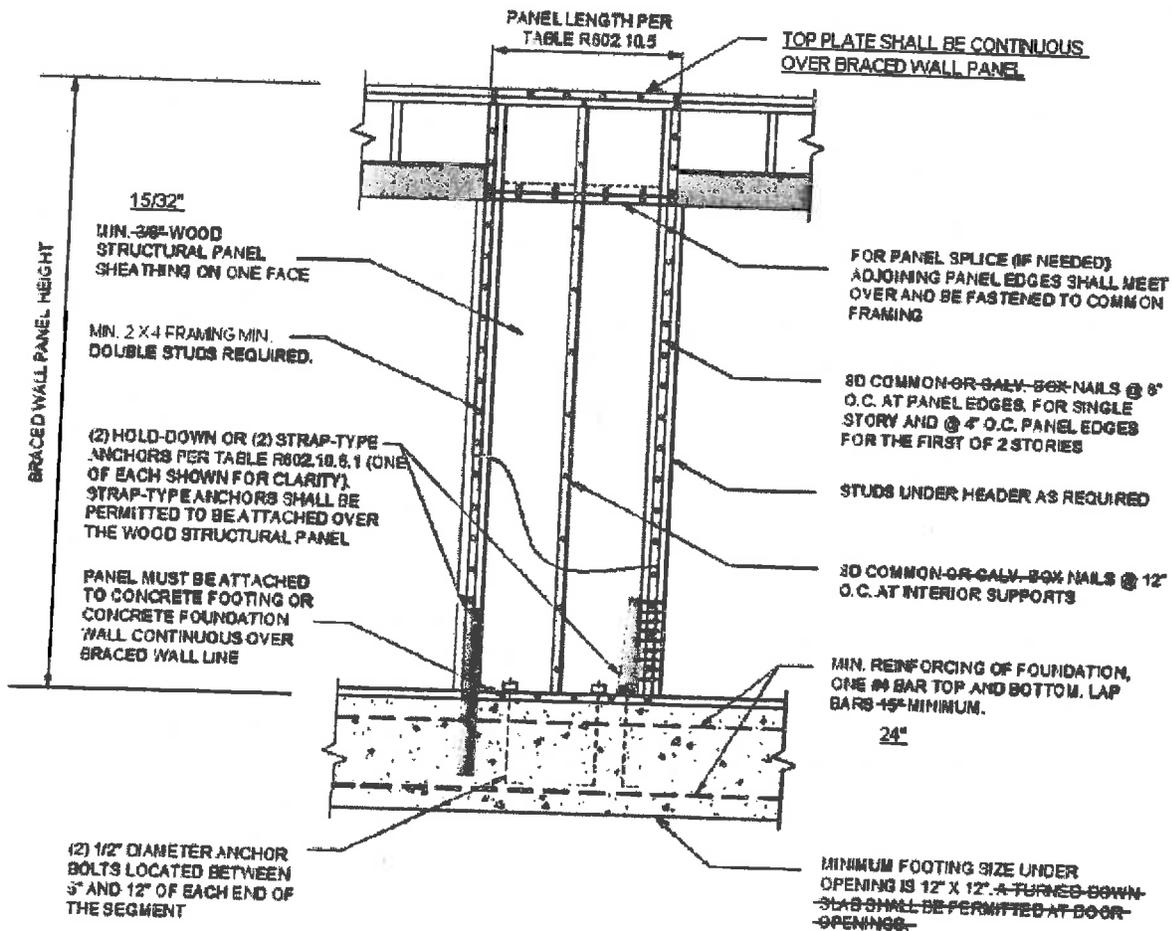
RATIONALE: 3/8" thick 3 ply-plywood shear walls experienced many failures during the Northridge Earthquake. Box nails were observed to cause massive and multiple failures of the typical 3/8" thick 3-ply plywood during the Northridge Earthquake. This proposed amendment specifies minimum sheathing thickness, nail size and spacing so as to provide a uniform standard of construction for designers and buildings to follow. This is intended to improve the performance level of buildings and structures that are subject to the higher seismic demands and reduce and limit potential damages to property. This proposed amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance observed in 1994 Northridge Earthquake.

In September 2007, limited cyclic testing was conducted by a private engineering firm to determine if wood structural panels fastened with staples would exhibit the same behavior as the wood structural panels fastened with common nails. The test result revealed that wood structural panel fastened with staples appeared to be much lower in strength and stiffness than wood structural panels fastened with common nails. It was recommended that the use of staples as fasteners for wood structural panel shear walls or diaphragms not be permitted to resist seismic forces in structures assigned to Seismic Design Category D₀, D₁ and D₂ unless it can be substantiated by cyclic testing.

This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to place design and construction limits on stapled nail fasteners used in wood structural panel shear walls not substantiated with cyclic testing and requiring minimum sheathing thickness and nailing type and size will help to maintain minimum quality of construction and performance standards of structures and therefore need to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R6-05. Figure R602.10.6.1 of the 2013 Edition of the California Residential Code is amended to read as follows:



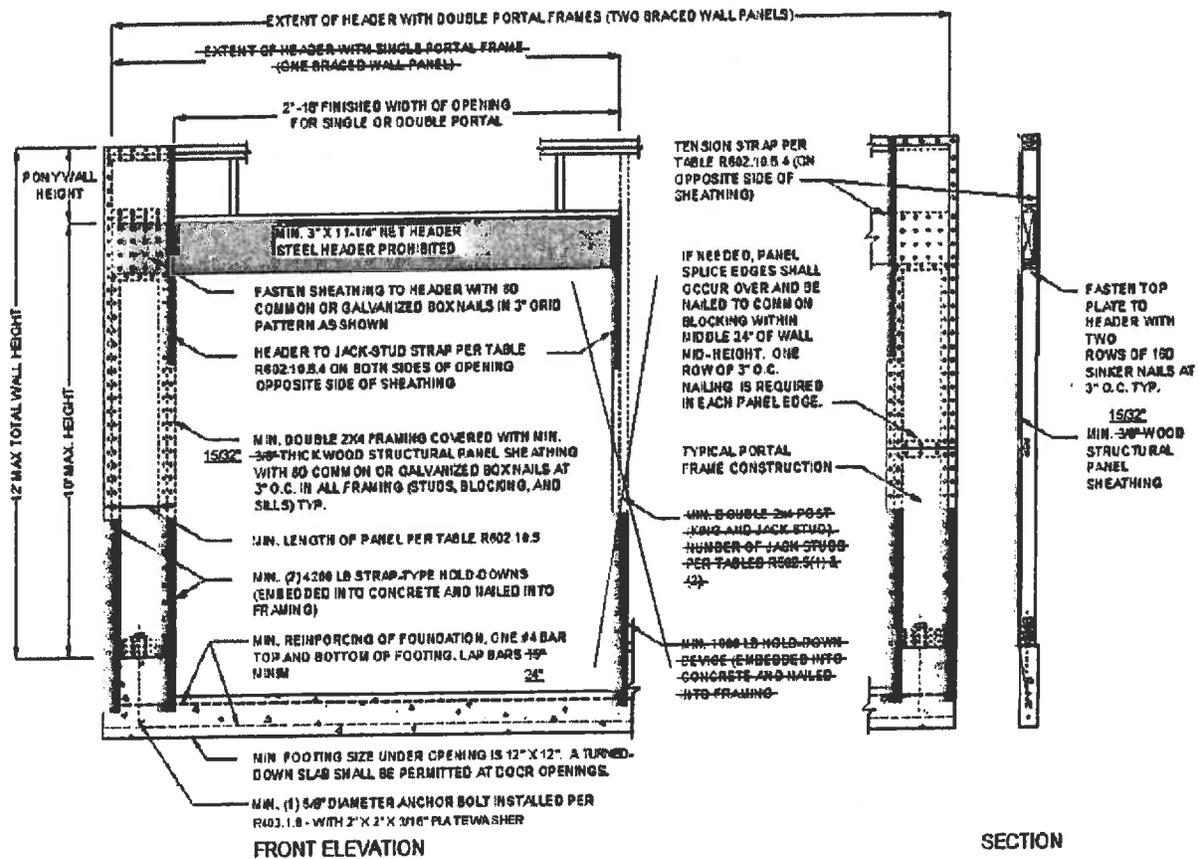
**FIGURE R602.10.6.1
METHOD ABW—ALTERNATE BRACED WALL PANEL**

RATIONALE: 3/8" thick 3 ply-plywood shear walls experienced many failures during the Northridge Earthquake. Box nails were observed to cause massive and multiple failures of the typical 3/8" thick 3-ply plywood during the Northridge Earthquake. This proposed amendment specifies minimum sheathing thickness, nail size and spacing so as to provide a uniform standard of construction for designers and buildings to follow. This is intended to improve the performance level of buildings and structures that are subject to the higher seismic demands and reduce and limit potential damages to property. This proposed amendment reflects the recommendations by the Structural Engineers Association of Southern California

(SEAOOSC) and the Los Angeles City Joint Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification requiring minimum sheathing thickness and nailing type and size will help to maintain minimum quality of construction and performance standards of structures and therefore need to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R6-06. Figure R602.10.6.2 of the 2013 Edition of the California Residential Code is amended to read as follows:



**FIGURE R602.10.6.2
METHOD PFH—PORTAL FRAME WITH HOLD-DOWNS
AT DETACHED GARAGE DOOR OPENINGS**

RATIONALE: 3/8" thick 3 ply-plywood shear walls experienced many failures during the Northridge Earthquake. Box nails were observed to cause massive and multiple failures of the typical 3/8" thick 3-ply plywood during the Northridge Earthquake. This proposed amendment specifies minimum sheathing thickness, nail size and spacing so as to provide a uniform standard of construction for designers and buildings to follow. This is intended to improve the performance level of buildings and structures that are subject to the higher seismic demands and reduce and limit potential damages to property. This proposed amendment reflects the recommendations by the Structural Engineers Association of Southern California

(SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification requiring minimum sheathing thickness and nailing type and size will help to maintain minimum quality of construction and performance standards of structures and therefore need to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R6-07. Table R602.10.5 of the 2013 Edition of the California Residential Code is amended to read as follows:

**TABLE R602.10.5
MINIMUM LENGTH OF BRACED WALL PANELS**

METHOD (See Table R602.10.4)		MINIMUM LENGTH ^a (Inches)					CONTRIBUTING LENGTH (Inches)
		Wall Height					
		8 feet	9 feet	10 feet	11 feet	12 feet	
DWB, WSP, SFB, PBS, PCP, HPS, BV-WSP		48	48	48	53	58	Actual ^b
GB		48	48	48	53	58	Double sided = Actual Single sided = 0.5 × Actual
LIR		55	62	69	NP	NP	Actual ^b
ABW	SDC A, B and C, wind speed < 110 mph	28	32	34	38	42	48
	SDC D ₁ , D ₂ and D ₃ , wind speed < 110 mph	32	32	34	NP	NP	
PFH	Supporting roof only	16-24	16-24	16-24	18-24^c	20-24^c	48
	Supporting one story and roof	24	24	24	27 ^d	29 ^d	48
PFG		24	27	30	33 ^d	36 ^d	1.5 × Actual ^b
CS-G		24	27	30	33	36	Actual ^b
CS-PF		16-24	18-24	20-24	22-24^e	24 ^e	Actual ^b
CS-WSP, CS-SFB	Adjacent clear opening height (inches)						Actual ^b
	≤ 64	24	27	30	33	36	
	68	26	27	30	33	36	
	72	27	27	30	33	36	
	76	30	29	30	33	36	
	80	32	30	30	33	36	
	84	35	32	32	33	36	
	88	38	35	33	33	36	
	92	43	37	35	35	36	
	96	48	41	38	36	36	
	100	—	44	40	38	38	
	104	—	49	43	40	39	
	108	—	54	46	43	41	
	112	—	—	50	45	43	
	116	—	—	55	48	45	
	120	—	—	60	52	48	
	124	—	—	—	56	51	
	128	—	—	—	61	54	
132	—	—	—	66	58		
136	—	—	—	—	62		
140	—	—	—	—	66		
144	—	—	—	—	72		

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

NP = Not Permitted.

a. Linear interpolation shall be permitted.

b. Use the actual length when it is greater than or equal to the minimum length.

c. Maximum header height for PFH is 10 feet in accordance with Figure R602.10.6.2, but wall height may be increased to 12 feet with pony wall.

d. Maximum opening height for PFG is 10 feet in accordance with Figure R602.10.6.3, but wall height may be increased to 12 feet with pony wall.

e. Maximum opening height for CS-PF is 10 feet in accordance with Figure R602.10.6.4, but wall height may be increased to 12 feet with pony wall.

RATIONALE: It was observed by the Structural Engineer Association of Southern California (SEAOSC) and the Los Angeles City Task Force that high aspect ratio shear walls experienced many failures during the 1994 Northridge Earthquake. This proposed amendment provides a uniform standard of construction for designers and buildings to follow. This is intended to improve the performance level of buildings and structures that are subject to the higher seismic demands and reduce and limit potential damages to property. This proposed amendment is consistent with an amendment adopted during the previous code adoption cycle for the California Residential Code.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification ensures that the structural integrity with respect to “maximum shear wall aspect ratios” is maintained, therefore need to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Residential Code.

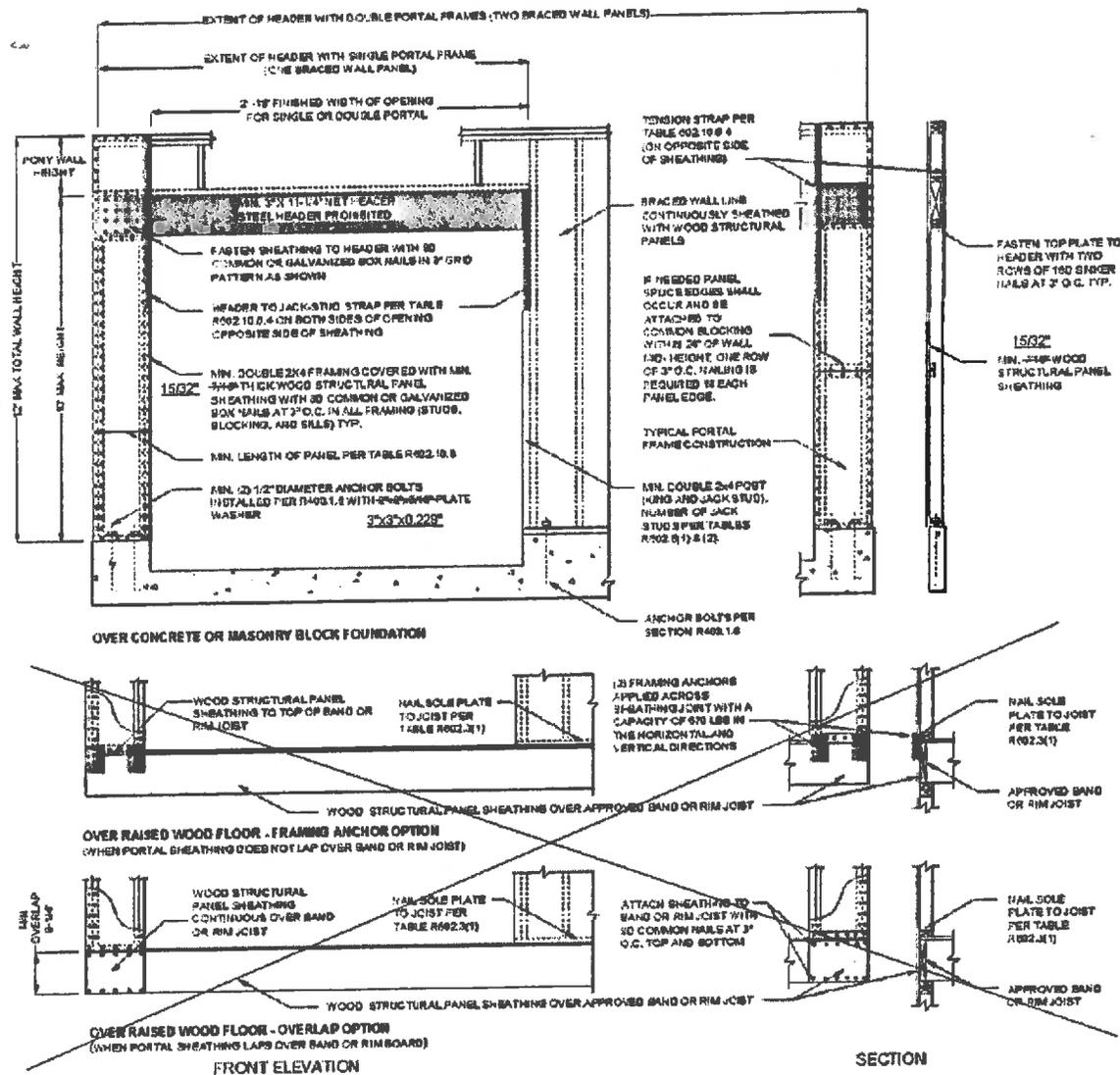
2013 R6-08. Section R602.10.2.3 of the 2013 Edition of the California Residential Code is amended to read as follows:

R602.10.2.3 Minimum number of braced wall panels. Braced wall lines with a length of 16 feet (4877 mm) or less shall have a minimum of two braced wall panels of any length or one braced wall panel equal to 48 inches (1219 mm) or more. Braced wall lines greater than 16 feet (4877 mm) shall have a minimum of two braced wall panels. No braced wall panel shall be less than 48 inches in length in Seismic Design Category D₀, D₁, or D₂.

RATIONALE: Plywood shear walls with high aspect ratio experienced many failures during the Northridge Earthquake. This proposed amendment specifies a minimum braced wall length to meet an aspect ratio consistent with other sections of the Residential Code as to provide a uniform standard of construction for designers and buildings to follow. This is intended to improve the performance level of buildings and structures that are subject to the higher seismic demands and reduce and limit potential damages to property. This proposed amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. This proposed amendment is consistent with an amendment adopted during previous code adoption cycles for the California Residential Code.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification reduces the aspect ratio help to maintain minimum quality of construction and performance standards of structures and therefore need to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R6-09. Figure R602.10.6.4 of the 2013 Edition of the California Residential Code is amended to read as follows:



For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE R602.10.6.4
METHOD CS-PF-CONTINUOUSLY SHEATHED PORTAL FRAME PANEL CONSTRUCTION

RATIONALE: 3/8" thick 3 ply-plywood shear walls experienced many failures during the Northridge Earthquake. Box nails were observed to cause massive and multiple failures of the typical 3/8" thick 3-ply plywood during the Northridge Earthquake. This proposed amendment specifies minimum sheathing thickness, nail size and spacing so as to provide a uniform standard of construction for designers and buildings to follow. This is intended to improve the performance level of buildings and structures that are subject to the higher seismic demands and reduce and limit potential damages to property. This proposed amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Joint Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The

proposed modification requiring minimum sheathing thickness and nailing type and size will help to maintain minimum quality of construction and performance standards of structures and therefore need to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R6-10. Section R602.10.9.1 of the 2013 Edition of the California Residential Code is deleted in its entirety:

~~**R602.10.9.1 Braced wall panel support for Seismic Design Category D₂.** In one-story buildings located in Seismic Design Category D₂, braced wall panels shall be supported on continuous foundations at intervals not exceeding 50 feet (15 240 mm). In two-story buildings located in Seismic Design Category D₂, all braced wall panels shall be supported on continuous foundations.~~

~~**Exception:** Two-story buildings shall be permitted to have interior braced wall panels supported on continuous foundations at intervals not exceeding 50 feet (15 240 mm) provided that:~~

- ~~1. The height of cripple walls does not exceed 4 feet (1219 mm).~~
- ~~2. First-floor braced wall panels are supported on doubled floor joists, continuous blocking or floor beams.~~
- ~~3. The distance between bracing lines does not exceed twice the building width measured parallel to the braced wall line.~~

RATIONALE: With the higher seismic demand placed on buildings and structures in this region, interior walls can easily be called upon to resist over half of the seismic loading imposed on simple buildings or structures. Without a continuous foundation to support the braced wall line, seismic loads would be transferred through other elements such as non-structural concrete slab floors, wood floors, etc. Requiring interior braced walls be supported by continuous foundations is intended to reduce or eliminate the poor performance of buildings or structures. This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to require all exterior walls and interior braced wall panels in buildings be supported on continuous footings for a complete load path will improve performance of buildings or structure during a seismic event and therefore, need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R6-11. Section R606.2.4 of the 2013 Edition of the California Residential Code is amended to read as follows:

R606.2.4 Parapet walls. Unreinforced solid masonry parapet walls shall not be less than 8 inches (203 mm) thick and their height shall not exceed four times their thickness. Unreinforced hollow unit masonry parapet walls shall be not less than 8 inches (203 mm) thick, and their height shall not exceed three times their thickness. Masonry parapet walls in areas subject to wind loads of 30 pounds per square foot (1.44 kPa) or located in Seismic Design Category D₀, D₁ or D₂, or on townhouses in Seismic Design Category C shall be reinforced in accordance with Section R606.12.

RATIONALE: The addition of the word "or" will prevent the use of unreinforced parapets in Seismic Design Category D₀, D₁ or D₂, or on townhouses in Seismic Design Category C.

This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of

producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to not allow the use of unreinforced masonry is intended to prevent non-ductile failures and sudden structural collapses and therefore needs to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R6-12. Section R606.12.2.2.3 of the 2013 Edition of the California Residential Code is amended to read as follows:

R606.12.2.2.3 Reinforcement requirements for masonry elements. Masonry elements listed in Section R606.12.2.2.2 shall be reinforced in either the horizontal or vertical direction as shown in Figure R606.11(2)R606.11(3) and in accordance with the following:

1. Horizontal reinforcement. Horizontal joint reinforcement shall consist of ~~at least two longitudinal W1.7 wires spaced not more than 16 inches (406 mm) for walls greater than 4 inches (102 mm) in width and at least one longitudinal W1.7 wire spaced not more than 16 inches (406 mm) for walls not exceeding 4 inches (102 mm) in width; or at least one No. 4 bar spaced not more than 48 inches (1219 mm). Where two longitudinal wires of joint reinforcement are used, the space between these wires shall be the widest that the mortar joint will accommodate.~~ Horizontal reinforcement shall be provided within 16 inches (406 mm) of the top and bottom of these masonry elements.
2. Vertical reinforcement. Vertical reinforcement shall consist of at least one No. 4 bar spaced not more than 48 inches (1219 mm). Vertical reinforcement shall be within ~~46-8~~ inches (406mm) of the ends of masonry walls.

RATIONALE: Reinforcement using longitudinal wires for buildings and structures located in high seismic areas are deficient and not as ductile as deformed rebar. Having vertical reinforcement closer to the ends of masonry walls help to improve the seismic performance of masonry buildings and structures.

This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to increase reinforcements will ensure that the ductility requirements for buildings in high seismic region meet the intent of the code and limit potential property damages and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R6-13. Exception of Section R602.3.2 of the 2013 Edition of the California Residential Code is amended to read as follows:

Exception: AIn other than Seismic Design Category D₀, D₁ or D₂, a single top plate may be installed in stud walls, provided the plate is adequately tied at joints, corners and intersecting walls by a minimum 3-inch-by-6-inch by a 0.036-inch-thick (76 mm by 152 mm by 0.914 mm) galvanized steel plate that is nailed to each wall or segment of wall by six 8d nails on each side, provided the rafters or joists are centered over the studs with a tolerance of no more than 1 inch (25 mm). The top plate may be omitted over lintels that are adequately tied to adjacent wall sections with steel plates or equivalent as previously described.

RATIONALE: The cities and county of the Los Angeles region have taken extra measures to maintain the structural integrity of the framing of the shear wall system for buildings and structures subject to high seismic loads by eliminating single top plate construction. The performance of modern day braced wall

panel construction is directly related to an adequate load path extending from the roof diaphragm to the foundation system. A single top plate is likely to be over nailed due to the nailing requirements at a rafter, stud, top plate splice, and braced wall panel edge in a single location. In addition, notching on a single top plate for plumbing, ventilation and electrical wiring may reduce the load transfer capacity of the plate without proper detailing. Majority of buildings and structures designed and built per the California Residential Code with a single top plate may not need structural observation and special inspections. The potential construction mistakes mentioned above could not be caught and corrected by knowledgeable engineers and inspectors, and could jeopardize structural performance of buildings and structures located in high seismic areas.

This proposed amendment is a continuation of an amendment adopted during the previous code adoption cycle.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to eliminate the usage of a single top plate will help to maintain minimum quality of construction and performance standards of structures and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R8-01. Section R803.2.4 is added to Chapter 8 of the 2013 Edition of the California Residential Code to read as follows:

R803.2.4 Openings in horizontal diaphragms. Openings in horizontal diaphragms shall conform with Section R503.2.4.

RATIONALE: Section R802 of the Code does not provide any prescriptive criteria to limit the maximum roof opening size nor does Section R803 provide any details to address the issue of shear transfer near larger roof openings. With the higher seismic demand placed on buildings and structures in this region, it is important to ensure that a complete load path is provided to reduce or eliminate potential damages caused by seismic forces. Requiring blocking with metal ties around larger roof openings and limiting opening size is consistent with the requirements of Section R301.2.2.2.5.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to require specific detailing at large roof openings is intended to address the poor performance of roof diaphragms with openings and limit or reduce property damages during a seismic event and therefore needs to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

2013 R10-01. Section R1001.3.1 of the 2013 Edition of the California Residential Code is amended to read as follows:

R1001.3.1 Vertical reinforcing. For chimneys up to 40 inches (1016 mm) wide, four No. 4 continuous vertical bars adequately anchored into the concrete foundation shall be placed between wythes of solid masonry or within the cells of hollow unit masonry and grouted in accordance with Section R609. Grout shall be prevented from bonding with the flue liner so that the flue liner is free to move with thermal expansion. For chimneys more than 40 inches (1016 mm) wide, two additional No. 4 vertical bars adequately anchored into the concrete foundation shall be provided for each additional flue incorporated into the chimney or for each additional 40 inches (1016 mm) in width or fraction thereof.

RATIONALE: The performance of fireplace/chimney without anchorage to the foundation has been observed to be inadequate during major earthquakes. The lack of anchorage to the foundation can result in the overturning or displacement of the fireplace/chimney.

FINDINGS: Local Geological Conditions – The greater Los Angeles region is a densely populated area having buildings and structures constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to anchor masonry chimneys into concrete foundation will reduce injuries, save lives, and minimize structural damages and therefore needs to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the International Residential Code.

PART III

RECOMMENDED AMENDMENTS TO THE 2013 EDITION OF THE CALIFORNIA GREEN BUILDING STANDARDS CODE

(MANDATORY REQUIREMENTS)

2013 G1-01. Section 101.12 is added to the 2013 Edition of the California Green Building Standards Code to read as follows:

101.12 Fee for Mandatory Measures. A fee of ten percent (10%) of the plan check/permit fee shall be assessed to verify compliance with the mandatory measure of the California Green Building Standards Code.

RATIONALE: Due to the extra work it will take staff to review and verify compliance with the measures in the new code, a recommended fee of 10% of either the permit and plan check is proposed. While it is understood that each jurisdiction must determine what fee is appropriate for their jurisdiction, the recommended 10% is a starting point. This amount is based upon similar fees assessed for other supplemental reviews or inspection such as accessibility of energy compliance. It may be used as a basis for justifying the proposed fees based upon comparison to other similar fees as indicated above.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 G1-02. Section 101.12.1 is added to the 2013 Edition of the California Green Building Standards Code to read as follows:

101.12.1 Fee for Tier Measures. When Tier 1 or Tier 2 measures need to be verified by the enforcing agency, an additional ten percent (10%) of the plan check/permit fee may be assessed.

RATIONALE: Due to the extra work it will take staff to review and verify compliance with the measures in the new code, a recommended fee of 10% of either the permit and plan check is proposed. While it is understood that each jurisdiction must determine what fee is appropriate for their jurisdiction, the recommended 10% is a starting point. This amount is based upon similar fees assessed for other supplemental reviews or inspection such as accessibility of energy compliance. It may be used as a basis for justifying the proposed fees based upon comparison to other similar fees as indicated above.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 G2-01. Section 202 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

SUSTAINABILITY. Consideration of present development and construction impacts on the community, the economy, and the environment without compromising the needs of the future.

RATIONALE: The 2013 California Green Building Standards Code contains the word "sustainable" but does not define it. Although it is a term used in association with green building, the word "sustainability" is often confused to mean the same as green building. The proposed amendment allows clarity and distinguishing understanding while providing for a general definition.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 G3-01. Section 301.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

301.1 Scope. Buildings shall be designed to include the green building measures specified as mandatory in the application checklists contained in this code.

RATIONALE: The proposed editorial change to the indicated section provides clarity and consistency for the application of the CALGreen code.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 G3-02. Section 301.1.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

Section 301.1.1 Additions and alterations. [HCD] The mandatory provisions of Chapter 4 shall be applied to additions or alterations of existing residential buildings ~~where the additions or alterations increase the building's conditioned area, volume, or size. The requirement shall apply only to and/or within the specific area of the addition or alteration.~~ Code sections relevant to additions and alterations shall only apply to the portions of the building being added or altered within the scope of the permitted work.

RATIONALE: The purpose of the proposed amendment is to simplify the language and increase the scope of application, thus requiring CALGreen to be applied to all residential projects.

California State Housing and Community Development proposed the above 2013 CALGreen code section. The proposed section can only be applied to an existing house only if the volume or size of the condition space is increased. This proposed section, as written, does not encompass interior remodels. The proposed amendment modifies the State language to require additions, alterations, and interior remodels to comply with sections of CALGreen that are relevant to the scope of work.

CALGreen and other green building codes have been developed and implemented for some very basic reasons: water, energy, and air quality. The 2010 U.S. Census shows that California has a population of 37.25 million, 13.7 million homes and with ownership at 56.7%. UCLA Anderson Construction Forecast, a

highly recognized authority in predicting the future of construction in the State, has provided the following statistics:

2011	612,000 new homes constructed
2012	763,000 new homes constructed
2013	Just fewer than one million homes will be constructed
2014	1.3 million new homes constructed
Total	3.675 million new homes in four years.

These simple numbers illustrate that the new homes built in the last four years only equal approximately 9.9% of the total housing stock in the State. These houses comply with the new 2010 Green Standards, but the larger challenge is with the existing housing inventory.

The bulk of California's energy is generated by aging power plants. Increasingly, the development and application of alternate energy methods such as photovoltaics has gained market adoption. Coupling these new energy generation processes with new energy saving measures in the 2013 California Energy Code will allow us to potentially offset the need to construct new power plants, which would equate to a savings of billions of tax-payer dollars.

Water conservation is another issue being addressed by the new green codes. CALGreen addresses water conservation with requirements for landscape irrigation and plumbing fixtures. In the 2013 code edition kitchen facets will now have to comply with a slightly reduced flow. Starting January 1, 2014 a new State law goes into effect that prohibits the selling of any plumbing fixture that does not conform to the new established flow rates.

CALGreen also address's indoor air quality. Within the code there are multiple limits for VOC (volatile organic compounds) in paints, sealants and construction adhesives and formaldehyde contents in composite wood products. These new standards which restrict VOC and formaldehyde contents have shown to improve indoor air quality and minimize or eliminate occupant health issues related to sick building syndrome.

FINDINGS: Local Environmental Conditions – The majority of the building stock in the greater Los Angeles region are existing residences. The U.S. Census and the UCLA Anderson Construction Forecast reveal that there are 13.7 million homes in California in 2010, with 2.7 million new homes built in the past three years, illustrates that there are more than five times the number of existing homes as there are new homes built under the CALGreen code. To reduce the impact that the existing housing stock is having on energy, water, and air quality, this amendment proposes to address compliance with the CALGreen code at the time when a permit is issued. There are some estimates that existing buildings account for up to 40% of greenhouse gas emissions. This amendment offset this impact on the communities by implementing the green building measures whenever possible. Any projects that require a permit to be issued will be required to comply with only those sections that are relevant to the scope of work and thereby begin to contribute to improving the environment. This amendment established green building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 G5-01. Section 5.408.3 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

5.408.3 Excavated soil and land clearing debris [BSC] 100 percent of trees, stumps, rocks and associated vegetation and soils resulting primarily from land clearing shall be reused or recycled. For a phased project, such material may be stockpiled on site until the storage site is developed.

Exception: Reuse, either on-or off-site, of vegetation or soil contaminated by disease or pest infestation.

Notes:

1. If contamination by disease or pest infestation is suspected, contact the County Agricultural Commissioner and follow its direction for recycling or disposal of the material. (www.cdffa.ca.gov/exec/county/county_contacts.html)
2. For a map of known pest and/or disease quarantine zones, consult with the California Department of Food and Agriculture. (www.cdffa.ca.gov)
3. Contaminated soil shall not be reused and shall be disposed of or remediated in accordance with relevant regulations.

RATIONALE: On occasions, projects are proposed on sites where the soil is contaminated and falls outside the scope of a designated authority. The addition of Note #3 provides a mechanism for a local jurisdiction to administer to the removal or remediation of contaminated soils within guidelines established by the city or method developed by the applicant and approved by the local jurisdiction.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 G6-01. Section 601.1 is added to the 2013 Edition of the California Green Building Standards Code to read as follows:

601.1. This section lists the organization and standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard.

RATIONALE: The proposed editorial changes to the table of reference and standards in Chapter 6 have been update to the to 2013 CALGreen code.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 GA4-07. Section A4.405.4 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A4.405.4 Use of building materials from rapidly renewable sources. One or more of the following materials manufactured from rapidly renewable sources or agricultural by-products is used for a minimum of 2.5 percent of the total value, based on estimated cost of materials on the project:

1. Insulation
2. Bamboo or cork
3. Engineered products
4. Agricultural based products
5. Other products acceptable to the enforcing agency

Note: The intent of this section is to utilize building materials and products which are typically harvested within a 10-year or shorter cycle

RATIONALE: The current code section provides no guidelines for the percentage of materials to be used from rapidly renewable sources. The proposed editorial change provides a minimum percentage of material from a rapidly renewable source that must be used for the applicant to obtain compliance and receive credit.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 GA4-08. Section A4.407.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A4.407.1 Drainage around foundations. Install foundation and landscape drains which discharge to a dry well, sump, bioswale or other approved on-site location except when not required by state code or locally approved ordinance.

RATIONALE: The current language does not take into consideration the requirements of other codes or ordinances. The proposed editorial change addresses the requirements of other codes or ordinances and eliminates an applicant ability to achieve credit while complying with the requirement of another code.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 GA4-09. Sections A4.408.1 and A4.408.1.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A4.408.1 Enhanced construction waste reduction. Nonhazardous construction and demolition debris generated at the site is diverted to recycle or salvage in compliance with one of the following:

Tier 1. At least a 65 percent reduction

Tier 2. At least a 75 percent reduction

Exceptions:

- ~~1. Equivalent or alternative waste reduction methods are developed by working with local agencies if diversion or recycle facilities capable of compliance with this item do not exist.~~
- ~~2. The enforcing agency may make exceptions to the requirements of this section when jobsites are located in areas beyond the haul boundaries of the diversion facility.~~

~~**A4.408.1.1 Documentation.** Documentation shall be provided to the enforcing agency which demonstrates compliance with this section. Documentation shall be in compliance with Section 4.408.5.~~

RATIONALE: An applicant complying with either TIER 1 or 2 should receive credit for this section because the proposed project meets either of the exceptions. If an applicant is to comply with this section they would need to achieve the stated waste diversion percentages. Any other approach is giving credit for not complying which is not within the scope of the CALGreen code.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 GA5-01. Section A5.106.4.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A5.106.4.1 Reserved-Short-term bicycle parking. If the project is anticipated to generate visitor traffic, provide permanently anchored bicycle racks within 200 feet of the visitors' entrance, readily visible to passers-by, for 15 percent of visitor motorized vehicle parking capacity, with a minimum of one two-bike capacity rack.

RATIONALE: This current section for bicycle parking only requires 5 percent of the motorized vehicle parking capacity which is equal to mandatory requirement in section 5.106.4.1. The editorial change to 15% increases the requirement and removes the applicant ability to obtain compliance in two different sections.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 GA5-02. Table A5.106.4.3 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A5.106.4.3 Changing rooms. For buildings with over 10 tenant-occupants, provide changing/shower facilities for tenant-occupants only in accordance with Table A5.106.4.3 or document arrangements with nearby changing/shower facilities.

NUMBER OF TENANT-OCCUPANTS	SHOWER/CHANGING FACILITIES REQUIRED ²	2-TIER (12" X 15" X 72") PERSONAL EFFECTS LOCKERS ^{1,2} REQUIRED
0-10	0 <u>1 unisex shower</u>	1

11-50	1 unisex shower	2
51-100	1 unisex shower	3
101-200	1 shower stall per gender	4
Over 200	1 shower stall per gender for each 200 additional tenant-occupants	One 2-tier locker for each 50 additional tenant-occupants

- ~~1. One 2-tier locker serves two people. Lockers shall be lockable with either padlock or combination lock.~~
- ~~2. Tenant spaces housing more than 10 tenant occupants within buildings sharing common toilet facilities need not comply; however, such common shower facilities shall accommodate the total number of tenant occupants served by the toilets and include a minimum of one unisex shower and two 2-tier lockers.~~

Note: Additional information on recommended bicycle accommodations may be obtained from Sacramento Area Bicycle Advocates

RATIONALE: Under the current table the applicant can obtain credit for installing zero changing rooms. By modifying the requirement in the above table, the applicant must install at least one changing room to receive credit for this section.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 GA5-03. Section A5.106.6.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A5.106.6.1 Reduce parking capacity. With the approval of the enforcement authority, employ strategies to reduce on-site parking area by 20% by

1. Use of on street parking or compact spaces, illustrated on the site plan or
2. Implementation and documentation of programs that encourage occupants to carpool, ride share or use alternate transportation.

Note: Strategies for programs may be obtained from local TMAs.

RATIONALE: This section does not establish a minimum number of reduced parking spaces to achieve compliance, only that the local authority approves the proposed reduction. The editorial change establishes a minimum percentage to achieve a credit for this section.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 GA5-04. Section A5.106.11.2, Table A5.106.11.2.2 and Table A5.106.11.2.3 of the 2013 Edition of the California Green Building Standards Code are amended to read as follows:

A5.106.11.2 Cool Roof for reduction of heat island effect. Use roofing materials having a minimum aged solar reflectance and thermal emittance complying with Sections A5.106.11.2.1 and A5.106.11.2.2 or a minimum aged Solar Reflectance Index (SRI) complying with Section A5.106.11.2.3 and as shown in Table A5.106.11.2. 2 for Tier 1 or Table A5.106.11.2.3 for Tier 2.

Exceptions:

- ~~1. Roof constructions that have a thermal mass over the roof membrane, including areas of vegetated (green) roofs, weighing at least 25 lb/sf~~
- ~~2. Roof area covered by building integrated solar photovoltaic and building integrated solar thermal panels.~~

**TABLE A5.106.11.2.2 [BSC]
TIER 1**

ROOF SLOPE	CLIMATE ZONE	MINIMUM 3-YEAR AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SRI
≤ 2:12	1 - 16	0.55 <u>0.63</u>	0.75	64 <u>82</u>
> 2:12	1 - 16	0.20	0.75	46 <u>27</u>

**TABLE A5.106.11.2.3
TIER 2**

ROOF SLOPE	CLIMATE ZONE	MINIMUM 3-YEAR AGED SOLAR REFLECTANCE	THERMAL EMITTANCE	SRI
≤ 2:12	1 - 16	0.65 <u>0.68</u>	0.85	78 <u>85</u>
> 2:12	1 - 16	0.30 <u>0.28</u>	0.85	30 <u>35</u>

RATIONALE: In Tables A5.106.11.2.2 and A5.106.11.2.3 are indicating new values for Cool roof ratings. These new values for the cool roof rating are not in alignment with standards being proposed by the California Energy Commission. Tier 1 cool roof values are a prescriptive requirement in the 2008 (current) Building Energy Efficiency Standards, and they have been shown to be cost-effective through studies previously conducted by the California Energy Commission in support of the standards. The proposed editorial changes will bring Chapter 6 and Chapter 11 into alignment and provide consistency for the applicant to achieve compliance with both chapters.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

2013 GA5-05. Section A5.406.1 of the 2013 Edition of the California Green Building Standards Code is amended to read as follows:

A5.406.1 Choice of materials. Compared to other products in a given product category, choose materials proven to be characterized by one or more of the following for a minimum of 5 percent of the total value, based on estimated cost of materials on the project.

RATIONALE: The current section does not provide any guidelines for a quantity of materials to achieve compliance. The editorial change establishes a minimum percentage for the different categories located within the section.

FINDINGS: Local Administrative Finding – This amendment is necessary for administrative clarification. It does not modify a Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and does not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. This amendment established administrative standards for the effective enforcement of building standards and therefore need to be incorporated into the code to assure that new buildings and structures and additions or alterations to existing buildings or structures are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

PART IV

RECOMMENDED AMENDMENTS TO THE 2013 UNIFORM FIRE CODE

Proposed amendments to the Uniform Fire Code codified in Sections 16.20.010 through 15.20.070, inclusive, are necessary for administrative clarification. These changes do not modify any Building Standards pursuant to Sections 17958 and 18941.5 of the California Health and Safety Code and do not require an express finding to be made pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code. These amendments establish administrative standards for the effective enforcement of the Fire Code therefore need to be incorporated into the Code.

§ 15.20.075 SECTION 105.6.27 AMENDED-LP-GAS.

Section 105.6.27 of the Fire Code is hereby amended to read as follows:

An operational permit is required for :

1. Storage and use of LP-gas on land zoned "manufacturing".

Exception: A permit is not required for individual containers with a 500-gallon (1893 L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 500-gallons (1893 L), used exclusively for emergency power generation serving Group R-3 occupancies not located in the Wildland-Urban Interface area.

2. Operation of cargo tankers that transport LP-gas.

RATIONALE: Section 105.6.27 requires permits from the Fire Department for the storage and use of LP gas. This assists the Fire Department in locating and, as necessary, inspecting potential combustion sources.

FINDINGS: Local climatic and geographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, and due to some older nonconforming buildings, it is necessary during the new construction or building renovation to use the City ordinance to control and minimize conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion.

§ 15.20.080 SECTION 307.1.1 AMENDED-PROHIBITED OPEN BURNING.

Section 307.1.1 of the Fire Code is hereby amended to read as follows:

Prohibited open burning.

Open burning that is offensive or objectionable because of smoke emissions or when atmospheric conditions or local circumstances make such fires hazardous shall be prohibited. No person shall dispose of any combustible waste material by burning, or kindle or maintain any bonfire, rubbish fire, incinerator, or other outside non-permitted fireplace or chimney, or authorize any such fire to be kindled or maintained on any lot or parcel of land within the city without a written permit from the Chief of the fire department.

RATIONALE: Section 307 details conditions under which open burning can be performed such as approved portable outdoor fireplaces. Existing prohibition against burning of rubbish remains.

FINDINGS: Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density vegetation.

§15.20.090 CHAPTER 5 SECTIONS 503.2.1 AMENDED-DIMENSIONS AND 503.3.

Fire Apparatus Access Roads 503.2.1 Dimensions

503.2.1 is amended and Table 503.2.1-A is added to the California Fire Code to read in their entirety as follows:

503.2.1 Private roads used for fire apparatus access. The minimum width of private roads which are also used for fire apparatus access shall be in accordance with Table 503.2.1-A. The minimum required width for fire apparatus access should not be used to determine the minimum width of private roads. When approved by the chief this requirement may be modified or waived.

Table 503.2.1-A. Minimum Width of Private Roads Also Used for Fire Apparatus Access

Location of Parking	Minimum Road Width
Parking not permitted on road	25 20
Parking permitted on one side only	28 26
Parking permitted on both sides	34 32

§ 15.20.100 SECTION 503.3 AMENDED - FIRE LANE MARKING/SIGNAGE.

~~Section 503.3 of the Fire Code is hereby amended to read as follows:~~

~~*Fire Lane Marking/Signage.* The designation shall be indicated:~~

~~(1) By a sign posted immediately adjacent to, and visible from, the designated place clearly stating in letters not less than one inch in height that the place is a fire lane;~~

~~(2) By outlining or painting the place in red and, in contrasting color, marking the place with the words "FIRE LANE", which are clearly visible from the vehicle, or~~

~~(3) By a red curb or red paint on the edge of the roadway upon which clearly marked the words "FIRE LANE". The Chief shall have the authority to designate fire apparatus access roads on private property.~~

SECTION 503.2.4 AMENDED - TURNING RADIUS

Section 503.2.4 of the Fire Code is hereby amended to read as follows:

Turning radius. Fire apparatus access roads shall have a minimum 38-foot (11590 mm) centerline radius [28-foot (8540 mm) inside radius, 48-foot (14640 mm) outside radius] on curves.

§ 15.20.110 RESERVED. SECTION 503.3 AMENDED - FIRE LANE MARKING/SIGNAGE.

Section 503.3 of the Fire Code is hereby amended to read as follows:

Fire Lane Marking/Signage. The designation shall be indicated:

1. By a sign posted immediately adjacent to, and visible from, the designated place clearly stating in letters not less than one inch in height that the place is a fire lane;

2. By outlining or painting the place in red and, in contrasting color, marking the place with the words "FIRE LANE", which are clearly visible from the vehicle, or
3. By a red curb or red paint on the edge of the roadway upon which clearly marked the words "FIRE LANE". The Chief shall have the authority to designate fire apparatus access roads on private property.

RATIONALE: Text requires enhanced design and marking of fire lanes to assist with emergency response.

FINDINGS: Local climatic and geographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, and due to some older nonconforming buildings, it is necessary during the new construction or building renovation to use the City ordinance to control and minimize conditions hazardous to life and property, which may result from fire and impediments to access.

§ 15.20.130 RESERVED. SECTION 903.2 AMENDED - AUTOMATIC SPRINKLER SYSTEMS.

Section 903.2 of the Fire Code is hereby amended to read as follows:

1. In all new buildings regardless of the type of construction or occupancy.

Exceptions:

- A) Detached Group U occupancies, providing the floor area does not exceed 1000 square feet.
- B) Other minor buildings and/or occupancies as approved by the Fire Chief.

2. In existing buildings with new occupancies as required by other sections of the Fire Code.

RATIONALE: Text allows small detached garages/workshops with low fire load and no life safety issues to be non-sprinklered.

FINDINGS: Local climatic and geographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, and due to some older nonconforming buildings, it is necessary during the new construction or building renovation to use the City ordinance to control and minimize conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion.

§ 15.20.140 SECTION 903.2 AMENDED—AUTOMATIC SPRINKLER SYSTEMS.

Section 903.2 of the Fire Code is hereby amended to read as follows:

1. In all new buildings regardless of the type of construction or occupancy.

EXCEPTIONS:

- A) Detached Group U occupancies, providing the floor area does not exceed 1000 square feet.
- B) Other minor buildings and/or occupancies as approved by the Fire Chief.

2. In existing buildings with new occupancies as required by other sections of the Fire Code.

RATIONALE: New text allows small detached garages/workshops with low fire load and no life safety issues to be non-sprinklered.

FINDINGS: Local climatic and geographic conditions—The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, and due to some older nonconforming buildings, it is necessary during the new construction or building renovation to use the City ordinance to control and minimize conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion.

SECTION 903.2.18 AMENDED—GROUP U PRIVATE GARAGES AND CARPORTS ACCESSORY TO GROUP R-3 OCCUPANCIES.

Section 903.2.18 of the Fire Code is hereby amended to read as follows:

Carports with habitable space above, detached private garages over 1000 square feet in area, and attached private garages shall be protected by fire sprinklers in accordance with this section. These areas shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used.

§ 15.20.150 SECTION 903.3.1.2 AMENDED - NFPA 13R SPRINKLER SYSTEM.

Section 903.3.1.2 of the Fire Code is hereby amended to read as follows:

Where allowed in buildings of Group R, up to and including buildings four stories in height, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13R with the following additions:

- (a) Attics shall be fully sprinklered with quick-response intermediate temperature heads.
- (b) Private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area.

§ 15.20.160 SECTION 903.3.1.3 AMENDED - NFPA 13D SPRINKLER SYSTEM.

Section 903.3.1.3 of the Fire Code is hereby amended to read as follows:

Where allowed in buildings of Group R, automatic sprinkler systems shall be installed throughout in accordance with NFPA 13D with the following additions:

- (a) Attics containing forced air units shall have one or more quick-response intermediate temperature sprinkler heads adjacent to each unit.
- (b) Private garages shall be sprinklered and shall have a design density of an Ordinary Hazard Group 1 occupancy with a design area of two (2) heads. Quick-response intermediate temperature commercial type heads shall be used for the garage area.
- (c) Attics and basements used for storage purposes shall be fully sprinklered with residential type heads.

(d) A single exterior bell activated by the waterflow switch shall be provided at an approved location.

§ 15.20.170 SECTION 903.6 1103.5 AMENDED - AUTOMATIC SPRINKLER SYSTEMS IN EXISTING BUILDINGS.

Section ~~903.6~~ 1103.5 of the Fire Code is hereby amended to read as follows:

An automatic fire sprinkler system shall be installed throughout the following existing buildings:

- (a) Existing Group R, Division 1, 2, 2.1, 3, 3.1 or 34 Occupancies in which an addition of at least 50 percent of the existing square footage takes place.
- (b) Commercial buildings over 5,000 square feet when an addition is made.
- (c) Commercial buildings under 5,000 square feet when an addition is made that will make the total area greater than 5,000 square feet.
- (d) In buildings with new occupancies as required by other sections of the Fire Code.

RATIONALE: Promotes purpose of residential fire sprinkler systems as life safety systems meant for homes and residential care facilities of all sizes.

FINDINGS: Local climatic and geographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, and due to some older nonconforming buildings, it is necessary during the new construction or building renovation to use the City ordinance to control and minimize conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion.

§15.20.180 SECTIONS 603.8 AMENDED - INCINERATORS AND OPEN BURNING.

Section 603.8 of the Fire Code is hereby amended as follows:

Incinerators and open burning are prohibited except as provided under Section 307.1

RATIONALE: Section 307 details conditions under which open burning can be performed such as approved portable outdoor fireplaces. Existing prohibition against burning of rubbish remains.

FINDINGS: Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density vegetation.

§ 15.20.190 SECTION 806.1.1. AMENDED - CHRISTMAS TREES.

Section 806.1.1 is hereby amended as follows:

806.1.1 Restricted occupancies. Natural cut trees shall be prohibited in Group A, E, I-1, I-2, I-2.1, I-3, I-4, M, R-1, R-2 and R-4 occupancies.

Exceptions:

1. Trees located in areas protected by an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 shall not be prohibited in Group A, E, M, R-1, and R-2.
2. Trees in unsprinklered areas of Group A, E, M, R-1 and R-2 occupancies when treated with a flame retardant material that has been approved by the California State Fire Marshal. Each tree treated with a flame retardant material shall bear a tag which shows the date treated, name of the applicator, and the registration number of the flame retardant material.
3. Trees shall be allowed within dwelling units in Group R-2 occupancies.

RATIONALE: Section 806.1.1 specifies occupancies where cut trees are allowed. Amendment will maintain same retardant requirement for unsprinklered buildings but will allow untreated trees in sprinklered areas as allowed in the new code. A separate section has been created for specific Christmas Tree Lot requirements. Section 806.1.4.10 has been added to cover electrical requirements.

FINDINGS: Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. Natural cut trees are subject to the local climatic conditions and can become extremely combustible if adequate moisture levels are not maintained.

§ 15.20.195 SECTION 806.1.4 ADDED - CHRISTMAS TREE LOTS.

Sections 806.1.4.1 - 806.1.4.11 are hereby amended and added as follows:

Permit and Plan.

806.1.4.1 A permit is required to establish, maintain or operate a Christmas tree lot. Application for permit shall be submitted to the chief for approval. ~~For Permits for Christmas Tree Lots and Tents, Canopies and Temporary Membrane Structures, see Chapter 24.~~

806.1.4.2 No person, including a holder of an un-revoked general merchandise license shall operate a Christmas tree lot without a permit issued pursuant to this section. A permit shall not be granted if the chief reasonably determines that the location or method of operation endangers life or constitutes a fire hazard. A permit may be revoked if the provisions of these sections are not met or maintained.

806.1.4.3 A permit granted pursuant to this section shall be valid from November 15th to December 25th of the year in which the permit is issued.

806.1.4.4 An applicant for a permit shall submit a dimensional plot plan of the proposed location with the application. The plot plan shall show the location of the Christmas trees, buildings, trailers, tents, temporary structures, aisle widths, fenced areas, emergency exits and portable fire extinguishers.

Location.

806.1.4.5 No person shall use any location for a Christmas tree lot where dry grass, weeds, paper, combustible waste or other combustible materials exist.

806.1.4.6 Christmas trees shall not be located within 15 feet of any building, trailer, structure or temporary building which is not necessary to the operation of the Christmas tree lot.

806.1.4.7 Christmas trees shall not be located within 25 feet of any facility where flammable or combustible liquids are produced, stored, handled or dispensed.

Fire Protection.

806.1.4.8 Portable Fire Extinguisher. A minimum of (2) two 2A:10BC rated fire extinguishers shall be provided. Travel distance to fire extinguishers shall not exceed 50 feet.

Sources of Ignition.

806.1.4.9 Smoking or open flames shall not be permitted upon any Christmas tree lot. Approved "NO SMOKING" signs shall be posted as required.

806.1.4.10 An approved fused electrical source shall be provided. If extension cords are used, they shall be a minimum size of 12-gauge wire, have grounding capabilities and be UL (Underwriters Laboratories) approved for outdoor use. Extension cords shall be in good condition without splices, deterioration or damage.

Closure of the Christmas Tree Lot.

806.1.4.11 On January 5th, following the permit period, all cut, natural Christmas trees, combustible materials, tents, trailers, temporary buildings and structures associated with the Christmas tree lot shall be removed and the location shall be cleaned to the reasonable satisfaction of the chief.

RATIONALE: Section 806.1.1 specifies occupancies where cut trees are allowed. Amendment will maintain same retardant requirement for unsprinklered buildings but will allow untreated trees in sprinklered areas as allowed in the new code. A separate section has been created for specific Christmas Tree Lot requirements. Section 806.1.4.10 has been added to cover electrical requirements.

FINDINGS: Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. Natural cut trees are subject to the local climatic conditions and can become extremely combustible if adequate moisture levels are not maintained. Christmas tree lots are open to the public and can create a large fire load due to the amount of vegetation on site.

§ 15.20.240 SECTION ~~2206.2.3~~ 2306.2.3 AMENDED CHAPTER 22, SECTION ~~2206.2.3.1~~ AND ~~2206.2.3.2~~ ADDED - PROTECTED ABOVEGROUND TANKS.

Section ~~2206.2.3~~ 2306.2.3 is hereby amended to read as follows:

~~2206.2.3~~ 2306.2.3 Protected aboveground tanks. The storage and dispensing of Class I, II, or IIIA liquid motor fuels into the fuel tank of a motor vehicle from protected aboveground tanks located outside buildings shall be limited to fleet vehicle motor fuel-dispensing facilities except as approved by the chief on a site specific basis.

RATIONALE: Meets previous intent and uses same definition as Fire Code for fleet vehicle motor fuel-dispensing facilities. Allows exceptions for the Chief. Two hour definition is removed because aboveground tanks must already have a minimum 2-hour rating to be listed as a "protected" tank.

FINDINGS: Local geographic conditions - The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, it is necessary to control the number and size of aboveground liquid fuel tanks in the City and minimize conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion.

§ 15.20.250 SECTION 3304.4 5601.1 AMENDED - LOCATIONS WHERE STORAGE OF EXPLOSIVES AND BLASTING AGENTS ARE PROHIBITED.

Section 3304.4 5601.1 of the Fire Code is hereby amended to read as follows:

Storage of explosives and blasting agents is prohibited in all zones within the city, except "manufacturing" zones as established by ordinance in the official land use plan for the City as the same now exists or is hereafter amended.

RATIONALE: Strictly limits the location of possible use and/or storage of explosives and other flammable materials to those deemed safe and appropriate under the zoning code.

FINDINGS: Local geographic conditions - The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, it is necessary to control the number and location of explosives and blasting agents in the City and minimize conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion.

§ 15.20.260 CHAPTER 33 56, SECTION 3309 5609 ADDED - SEIZURE OF FIREWORKS.

Section 3309 5609 is hereby added to read in its entirety as follows:

3309 5609 Seizure of Fireworks. All fireworks shall be illegal in the City of Monrovia including California State Fire Marshal Safe and Sane. The fire code official shall have the authority to seize, take and remove fireworks and/or safe and sane fireworks stored, sold, offered for sale, used or handled in violation of the provisions of Title 19 CCR, Chapter 6 and Health and Safety Code, Chapter 9.

Exception: When permits are issued for such use.

RATIONALE: Strictly prohibits the private, non-professional use and possession of illegal fireworks, explosives and other flammable materials to reduce the fire risk caused by use of such items.

FINDINGS: Local geographic conditions - The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, it is necessary to control the number and location of explosives and blasting agents in the City and minimize conditions hazardous to life and property, which may result from fire, hazardous materials or an explosion. Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention and protection. Illegal use of fireworks by non-regulated, non-professionals, creates an extraordinary risk of fire, especially in the hillside areas.

§ 15.20.270 SECTION 3404.2.9.5.4 5704.2.9.6.1 AMENDED - ESTABLISHMENT OF LOCATIONS IN WHICH ABOVEGROUND STORAGE OF FLAMMABLE LIQUIDS AND BULK PLANTS AND TERMINALS MAY BE PERMITTED.

Section 3404.2.9.5.4 5704.2.9.6.1 of the Fire Code is hereby amended as follows:

Locations where above ground tanks are prohibited. Storage of Class I and Class II liquids in aboveground tanks outside of buildings shall be permitted only on land zoned "manufacturing" as established by ordinance in the official land use plan for the City, as the same now exists or is hereafter amended, subject to the approval of the Fire Chief.

§ 15.20.280 SECTION 3406.4 5706.4 AMENDED - BULK PLANTS OR TERMINALS.

Section 3406.4 5706.4 of the Fire Code is hereby amended by adding a paragraph to read as follows:

Bulk plants and terminals shall be permitted only on land zoned "manufacturing" as established by ordinance in the official land use plan for the City, as the same now exists or is hereafter amended, subject to approval of the Fire Chief.

§ 15.20.290 SECTION 3804.2 6104.2 AMENDED - ESTABLISHMENT OF LOCATIONS IN WHICH STORAGE OF LIQUEFIED PETROLEUM GASES MAY BE PERMITTED.

Section 3804.2 6104.2 of the Fire Code is hereby amended by adding a paragraph to read as follows:

The storage of liquefied petroleum gases shall be permitted only on land zoned "manufacturing" as established by ordinance in the official land use plan for the City, as the same now exists or is hereafter amended, subject to the approval of the Fire Chief.

Exception: Individual containers with a 500-gallon (1893 L) water capacity or less or multiple container systems having an aggregate quantity not exceeding 500-gallons (1893 L), used exclusively for emergency power generation serving Group R-3 occupancies or other locations as specifically approved by the Fire Chief.

§ 15.20.295 SECTION 6112 ADDED – USE OF LP-GAS FOR EMERGENCY POWER GENERATION IN GROUP R-3 OCCUPANCIES IN THE WILDLAND-URBAN INTERFACE AREA.

Section 6112 is hereby added to the Fire Code to read as follows: The use of liquefied petroleum gas for emergency power generation for Group R-3 occupancies located in the Wildland-Urban Interface area shall comply with the following:

1. All individual containers shall be a maximum size of 500-gallon (1893 L) water capacity. Multiple container systems shall not exceed 500-gallons (1893 L) in aggregate quantity.
2. A minimum 10 foot setback shall be maintained between the tank and all buildings in perpetuity. All future developments on the property shall be subject to this requirement.
3. Signage shall be provided on the tank indicating its contents and also warning of "NO SMOKING WITHIN 25 FEET".
4. Weeds, grass, brush, trash, and other combustible materials shall be kept a minimum of 10 feet from the tank.
5. A minimum 6A:80BC fire extinguisher shall be provided within 50 feet of the tank. It shall be the applicant's responsibility to have the fire extinguisher serviced by a qualified contractor on an annual basis.
6. During refueling, the LP tank vehicle shall not be left unattended at any time.

RATIONALE: Provides mitigation for protection of LP-gas tanks against fire exposure in the Wildland-Urban Interface area. Limits use of LP-gas to emergency power generation only.

FINDINGS: Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and can pose as an exposure hazard to LP-gas tanks.

§ 15.20.300 SECTION 313.3 ADDED - RESPONSIBILITY FOR FIRE.

Section 313.3 is hereby added to the Fire Code to read as follows:

Any person utilizing an internal combustion engine on any grass-covered or brush-covered land shall be responsible for any emergency and response costs as a result of such use, if the costs resulted from the person's intentional or careless acts, or if the costs were caused by a defective or deficient spark arrester. If the person is a juvenile, such person's parent or guardian shall be responsible for the costs.

RATIONALE: ~~Relocating~~ Adding text to general precautions will cover the entire City area as opposed to WUI area only.

FINDINGS: Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention in grass-covered or brush-covered areas.

§ 15.20.310 SECTION 4907 AMENDED - DEFENSIBLE SPACE.

Section 4907 of the Fire Code is hereby amended to read as follows:

4907.1 Objective. Provisions of this section are intended to modify the fuel load in areas adjacent to structures to create a defensible space within the hazardous fire zone.

4907.2 Fuel modification. Fuel modification shall be provided within a distance from buildings or structures as specified in Table 49-1. Distances specified in Table 49-1 shall be measured along the grade from the perimeter or projection of the building or structure.

Persons owning, leasing, controlling, operating, or maintaining buildings or structures requiring defensible spaces are responsible for modifying or removing non fire-resistive vegetation.

Ornamental vegetative fuel or cultivated ground cover, such as green grass, ivy, succulents or similar plants used as ground cover, are allowed to be within the designated defensible space provided they do not form a means of readily transmitting fire from the native growth to any structure.

Trees are allowed within the defensible space provided that the distances between crowns and crowns from adjacent trees, structures or unmodified fuel is not less than 15 feet (4572 mm). Trees shall be maintained free of dead wood and litter.

4907.3 Fences. Fences within 10 feet (3050 mm) of a structure and requiring a permit in accordance with the Building Code shall be constructed of noncombustible materials ~~where located within the defensible space.~~

TABLE 49-1
REQUIRED DEFENSIBLE SPACE

<i>Wildland-Urban Interface Area</i>	<i>Fuel Modification Distance (feet)</i>
Moderate hazard	30
High hazard	100
Extreme or very high hazard	200

The hazard rating shall be determined in accordance with N.F.P.A. 298 or legislative action.
For SI: 1 foot = 305 mm

4907.4 Adjacent landowners. Persons owning, leasing, controlling, operating, or maintaining land within the defensible space surrounding buildings or structures as described in Table 49-1 shall modify or

remove non-fire resistant vegetation from their land as necessary to provide the required fuel modification. Such persons may satisfy the requirements of this section by permitting access to their property to persons owning, leasing, controlling, operating or maintaining the neighboring property that is improved with buildings or structures for the purpose of modifying or removing non-fire resistant vegetation to provide the appropriate fuel modification. If such access is provided, persons owning, leasing, controlling, operating or maintaining the neighboring property that is improved with buildings or structures shall bear the duty to comply with the requirements of this section.

RATIONALE: Provides increased defensible space for structures to aid firefighting operations.

FINDINGS: Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels for fire prevention such as defensible space and fuel modification.

§ 15.20.320 SECTION 4914 4908 ADDED - ACCESS.

Section 4914 4908 is hereby added to the Fire Code to read as follows:

SECTION 4914 4908 ACCESS

4914.4 4908.1 Objective. The objective of this Section is to establish the minimum requirements for emergency vehicle access for buildings and structures located in the wildland-urban interface areas.

4914.2 4908.2 Subdivision Access. New subdivisions, as determined by this jurisdiction, shall be provided with fire apparatus access roads in accordance with the Fire Code and N.F.P.A. 299 and access requirements in accordance with Section 4914 4908.

4914.2.1 4908.2.1 Individual Structure Access. Individual structures hereafter constructed or moved into or within wildland-urban interface areas shall be provided with fire apparatus access in accordance with the Fire Code and N.F.P.A. 299 and driveways in accordance with Section 4914.4 4908.4. Marking of fire-protection equipment shall be provided in accordance with Section 4914.6 4908.6 and address markers shall be provided in accordance with Section 4914.7 4908.7.

4914.2.2 4908.2.2 Existing Conditions. Existing buildings and structures shall be provided with address markers in accordance with Section 4914.7 4908.7. Existing roads and fire protection equipment shall be provided with markings in accordance with Sections 4914.5 4908.5 and 4914.6 4908.6.

4914.3 4908.3 Restricted Access. Where emergency vehicle access is restricted due to secured access roads or driveways or where immediate access is necessary for life saving or fire fighting purposes, the code official is authorized to require a key box to be installed in an accessible location. The key box shall be of a type approved by the code official and shall contain keys to gain necessary access as required by the code official.

4914.4 4908.4 Driveways. Driveways shall be provided when access is not available at least within 150 feet (45720mm) from any portion of an exterior wall on grade. Driveways shall provide a minimum unobstructed width of 12 feet (3658 mm) and a minimum unobstructed height of 13 feet 6 inches (4115 mm). Driveways in excess of 150 feet (45720 mm) in length shall be provided with turnarounds. Driveways in excess of 200 feet (60960 mm) in length shall be provided with turnouts in addition to turnarounds. Driveway lengths shall not exceed one-half the approved maximum access road length.

Vehicle load limits shall be posted at both entrances to bridges on driveways. ~~See the Fire Code for additional bridge requirements.~~ Bridges shall also comply with CFC 503.2.6.

Driveway turnarounds shall ~~have~~ have an inside turning radii radius of not less than ~~30 feet (9144 mm)~~ 28-feet (8540 mm) and outside turning radii radius of not less than ~~45 feet (13716 mm)~~ 48-feet (14640 mm)

mm). Driveways which connect with a road or roads at more than one point may be considered as having a turnaround if all changes of direction meet the radii requirements for driveway turnarounds.

Driveway turnouts shall be an all-weather road surface at least 10 feet (3048 mm) wide and 30 feet (9144mm) long. Driveway turnouts shall be located as required by the code official.

A driveway shall be defined as vehicular ingress and egress routes that serve no more than two (2) buildings or structures, not including accessory structures, on one parcel, containing no more than three (3) dwelling units.

Exceptions: When topography prevents appropriate fire apparatus access the Fire Chief may consider additional fire protection systems, build-in fire resistive construction or supplementary brush abatement measures, or all of the above, in lieu of the minimum standards established. The Fire Chief or his/her designee shall have discretion on acceptable requirements which shall not be subject to planning commission review.

4914.5 4908.5 Marking of Roads. Approved signs or other approved notices shall be provided and maintained for access roads and driveways to identify such roads and prohibit the obstruction thereof or both.

All road identifications signs shall have minimum 4-inch high (102 mm) letters with 1-1/2 inch (13 mm) stroke on a contrasting 6-inch high (153 mm) sign. Road identification signage shall be mounted at a height of 7 feet (2134 mm) from the road surface to the bottom of the sign.

4914.6 4908.6 Marking of Fire Protection Equipment. Fire protection equipment and fire hydrants shall be clearly identified in a manner approved by the code official to prevent obstruction.

4914.7 4908.7 Address Markers. All buildings shall have a permanently posted address, which shall be placed at each driveway entrance and visible from both directions of travel along the road. In all cases, the address shall be posted at the beginning of construction and shall be maintained thereafter, and the address shall be visible and legible from the road on which the address is located.

Address signs along one-way roads shall be visible from both the intended direction of travel and the opposite direction.

Where multiple addresses are required at a single driveway, they shall be mounted on a single post.

Where a roadway provides access solely to a single commercial or industrial business, the address sign shall be placed at the nearest road intersection providing access to that site.

RATIONALE: Section numbers changed, 2010 Fire Code has relocated, revised for WUI chapter.

FINDINGS: Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels of emergency access.

§ 15.20.330 SECTION 104.11 AMENDED - AUTHORITY AT FIRES AND OTHER EMERGENCIES.

Section 104.11 is amended to read as follows:

Authority at Fire and Other Emergencies

104.11. General. The chief or officer of the fire department in charge at the scene of a fire or other emergency, including such fires and emergencies at industrial facilities where a private fire brigade or a private fire department is established, involving the protection of life or property or any part thereof, shall have the authority to direct such operations as necessary to extinguish or control any fire, perform any

rescue operations, investigate the existence of suspected or reported fires, gas leaks or other hazardous conditions or situations or of taking any action necessary in the reasonable performance of duty. Command and control of the emergency shall be the responsibility of the Monrovia Fire Department, with cooperation and technical or professional input provided by appropriate private sector employees and/or management. In the exercise of such power, the chief is authorized to prohibit any person, vehicle, vessel, or thing from approaching the scene and is authorized to remove or cause to be removed or kept away from the scene any vehicle, vessel or thing which could impede or interfere with the operations of the fire department and, in the judgment of the chief, any person not actually and usefully employed in the extinguishing of such fire or in the preservation of property in the vicinity thereof."

§ 15.20.335 SECTION 104.11.4 ADDED - FINANCIAL RESPONSIBILITY.

104.11.4 Financial Responsibility. Any person who personally, or through another, willfully, negligently, or in violation of law, sets a fire, allows a fire to be set, or allows a fire kindled or attended by him/her to escape from his/her control, allows any hazardous material to be handled, stored, disposed, of, or transported in a manner not in accordance with this Code, State law or nationally recognized Standards, allows any hazardous materials to escape from his/her control, allows continuation of a violation of this Code is liable for the expense of fighting the fire including fire investigation or for the expenses incurred during a hazardous materials incident, and such expense will be charged against that person.

NOTE: Administrative/Enforcement only. No change to standards.

§ 15.20.340 APPENDIX D AMENDED - FIRE APPARATUS ACCESS ROADS.

Appendix D-- Fire Apparatus Access Roads is amended and added to read in its entirety as follows:

Appendix D

Fire Apparatus Access Roads

~~(See CFC Section 503.2.1)~~

§ D101—GENERAL

D101.1 Scope. The provisions of Chapter 5, Section ~~503.2.1~~ 503, apply unless specially modified by this appendix. This appendix is intended to provide guidelines to be considered by the chief when determining fire department access for commercial and residential developments when onsite access is required. Approved alternatives for fire department access include the needs of the local fire department and the following sections.

§ D10—Minimum Specifications

D104.3.4 Multiple Access Provisions. The chief is authorized to require two or more means of access in accordance with Section 503.1.2

D103.5.1 Access-control Devices. When required fire department access is restricted by the installation of access-control devices, such devices shall be approved by the chief, provide adequate clear width for fire department apparatus and be maintained operable at all times.

D103.6 Signs. When motor vehicle parking is allowed on access roadways, such parking shall not encroach into the fire department access roadway. When this provision is compromised or restricted, the chief is authorized to require signage to indicate parking restriction in accordance with Section 503.3.

~~D102.1 Access and loading.~~ D103.7 Widths. Access roadways or streets shall comply with the provisions of Chapter 5, Section 503.2.1. Fire department access shall have an unobstructed width of not less than 25 20 feet. Road widths shall be as approved by the chief, or as follows:

1. 25 20 feet wide when parking is not allowed on either side of the roadway,
2. 28 26 feet wide when parking is not allowed on only one side of the roadway, and

3. 34 32 feet wide when parking is not restricted.

~~D105.1 Aerial ladder access. When the height of a structure at the roof eaves exceeds 27 feet or the capability of the fire department to access the roof safely utilizing ground ladders, the location and width of access roadways shall be such that truck-mounted aerial ladders may be utilized. Aerial ladder access shall include the ability to maneuver apparatus, deploy outriggers and provide proper climbing angles. The minimum road width shall not be less than 30 feet, or as approved by the chief.~~

~~D103.4 Dead ends. Dead end fire department access road shall be in accordance with Monrovia Fire Department Operations Manual "Fire Lanes". For the purpose of the apparatus maneuvering, the use of bulb or cul-de-sacs, hammerheads, "Y" heads, or other methods shall be subject to the capabilities of the fire apparatus, as required by the chief.~~

~~D103.4.1 Cul-de-sacs. Cul-de-sacs shall be maintained clear and unobstructed, allowing a turning radius that is consistent with the capabilities of the fire apparatus of the fire department, subject to the approval by the chief.~~

~~Exceptions: When alternate methods and means relating turning around of fire apparatus are provided, the provisions of this section may be modified by the chief.~~

~~D103.2 Grades. Fire apparatus roads shall not exceed 10 percent in grade.~~

Exceptions:

- ~~1. The chief is authorized to allow increased steepness of grade, depending on the apparatus requirements of the fire department, when every building in the residential development is provided with an approved automatic fire sprinkler system.~~
- ~~2. The chief may allow an increase of the maximum grade when other approved fire protection measures are provided.~~

~~D103.6.3 D103.2.1 Angles of Approach and Departure. The angles of approach and departure for any means of access shall not exceed the design limitations of the fire apparatus of the fire department, or 8 percent, whichever is greater.~~

~~D102.2 Surface. Fire apparatus access roads shall be designed and maintained to ensure that all-weather driving capabilities are maintained in accordance with CFC Section 503.2.3. When required by the chief, proposed alternate design criteria for an "all-weather surface" fire department access road or street, bearing the stamp of a professional engineer shall be provided.~~

~~D103.6.4 Drainage. When subject to run-off damage, the chief is authorized to require approved drainage.~~

RATIONALE: Provide community-specific definitions for roadway widths allowing for parking, otherwise no changes.

FINDINGS: Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for increased levels of emergency access. Better roadway design and increased width assists with emergency access.

§ 15.20.350 SECTION 504.4 ADDED PHOTOVOLTAIC SYSTEMS INSTALLATION REQUIREMENTS.

Section 504.4 is hereby added to the Fire Code to read as follows:

504.4 Photovoltaic system installation requirements.

504.4.1 Signage. Approved signage shall be provided at the following locations:

1. ~~Direct Current Conduit, Raceways, Enclosures, Cable Assemblies, and Junction Boxes~~
 - a. ~~Marking should be placed on all interior and exterior DC conduit, raceways, enclosures, and cable assemblies, every 10 feet, at turns and above and/or below penetrations and at all DC combiner and junction boxes.~~
 - b. ~~Marking should read "CAUTION: SOLAR CIRCUIT"~~
2. ~~DC Disconnect~~
 - a. ~~Signage should read "PV SYSTEM DC DISCONNECT"~~
3. ~~INVERTER:~~
 - a. ~~Signage should read "PV SYSTEM INVERTER WARNING: ELECTRICAL SHOCKHAZARD"~~
4. ~~AC DISCONNECT:~~
 - a. ~~Signage should read "PV SYSTEM AC DISCONNECT"~~
5. ~~Permanent directory or plaque providing location of service disconnecting means and photovoltaic system disconnecting means, if not located at the same location.~~

504.4.2 Emergency access pathways. Emergency access pathways shall be provided for photovoltaic system installations as follows:

1. Residential Systems:

Exceptions: Photovoltaic systems on detached garages and/or pool houses.

- a. ~~Residential Buildings with hip roof layouts: Modules should be located in a manner that provides 3' wide clear access pathway from the eave to the ridge on each roof slope where modules are located. The access pathway should be located at a structurally strong location on the building (such as a bearing wall).~~
- b. ~~Residential Buildings with a single ridge: Modules should be located in a manner that provides 3' wide access pathways from the eave to the ridge on each roof slope where modules are located.~~
- c. ~~Hips and valleys: Modules should be located no closer than 1.5' to a hip or a valley if modules are to be placed on both sides of a hip or valley. If the modules are to be located on only one side of a hip or valley that is of equal length then the modules may be placed directly adjacent to the hip or valley.~~
- d. ~~The modules should be located no higher than 3' below the ridge.~~

2. Commercial Systems:

- a. ~~Should be over structural members.~~
- b. ~~Centerline axis pathways should be provided in both axes of the roof. Centerline axis pathways should run on structural members or over the next closest structural member nearest to the center lines of the roof.~~
- c. ~~Should be straight line not less than 4' clear to skylights and/or ventilation hatches.~~
- d. ~~Should be straight line not less than 3' clear to roof standpipes.~~
- e. ~~Should provide not less than 3' clear around roof access hatch with a single minimum 4' clear pathway to parapet or roof edge.~~
- f. ~~Arrays should be no greater than 150 feet by 150 feet in size measured in either axis.~~
- g. ~~Pathway width options between array sections should be either:~~
 - 1) ~~8' or greater in width.~~
 - 2) ~~4' or greater in width and bordering on existing roof skylights or ventilation hatches.~~
 - 3) ~~4' or greater in width and bordering 4' x 8' "venting cutouts" every 20' on alternating sides of the pathway.~~

3. Ground Mounted Arrays:

- a. ~~A clear brush area of 10' is required for ground mounted photovoltaic arrays.~~

RATIONALE: ~~Creates access and signage requirements for all new photovoltaic system installations.~~

FINDINGS: ~~Local climatic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires can spread to structures via inadequately protected attics which will require fire suppression activities to commence on rooftops. Access and signage requirements for photovoltaic systems will ensure firefighter safety and aid rapid response to fires.~~

NOTE: Deletion from Monrovia Municipal Code only, reordering. No findings required.

§ 15.20.360 SECTION 540.3 1103.2 AMENDED—EMERGENCY RESPONDER RADIO COVERAGE IN EXISTING BUILDINGS.

Section 540.3 1103.2 of the California Fire Code is amended to read as follows:

540.3 1103.2 Emergency responder radio coverage in existing buildings. Existing buildings that do not have approved radio coverage for emergency responders within the building shall be equipped with such coverage according to one of the following:

1. Wherever an existing wired communication system cannot be repaired or is being replaced, or where not approved in accordance with Section 510.1, Exception 1.
2. Whenever total additions result in an increase of more than 5000 square feet in the total floor area, including mezzanines or additional stories, regardless of ownership. Additions shall be cumulative with each application for building permit from January 1, 2011.

RATIONALE: Creates thresholds for existing buildings to come into compliance for providing emergency responder radio coverage. Section numbers revised to reflect new code. Retroactive date maintained since inception of requirement from 2010 code cycle.

FINDINGS: Local climatic, geographic, and topographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for adequate emergency responder radio coverage.

The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, adequate emergency responder radio coverage is necessary for meeting the City's life safety needs. The water supply (domestic and fire flow) system within the City is directly affected by the topographical layout of Monrovia. The distribution system consists of high-low pressure and gravity systems zones, which carry the water from various reservoirs and storage tanks to different zones via water pipes. These street mains consist of high-pressure lines and low pressure lines where the pressure and flows are adequate in most of the areas of the city. This variation of pressure causes major problems to development, as well as fire suppression forces. Adequate emergency responder radio coverage is necessary for suppression forces to communicate levels of water supply during an emergency incident.

§ 15.20.370 VIOLATIONS. APPENDIX K SECTION K101.2 AMENDED - PERMITS.

~~Any person, firm, entity, or corporation violating any of the Fire Code or failing to comply with any of the mandatory requirements of the Fire Code shall be guilty of a misdemeanor and upon conviction thereof shall be punished as provided in Section 1.16.010 of this Code. Each such violator shall be guilty of a~~

~~separate offense for each and every day during any portion of which any violation of any provision of the Fire Code, or any failure to comply with a mandatory requirement of the Fire Code, is committed, continued or permitted to continue by any such violator, and he or she shall be punished accordingly.~~

Section K101.2 of the California Fire Code is amended to read as follows:

K101.2 Permits. An operational permit shall be required for haunted houses, ghost walks, or similar amusement uses in accordance with Appendix K101.2.

Exception: Haunted houses, ghost walks, or similar amusement uses in Group R-3 occupancies.

RATIONALE: Requires a permit from the Fire Department for certain high attendance activities that may involve some flammable materials or dangerous conditions.

FINDINGS: Local climatic, geographic, and topographic conditions - The City of Monrovia is located in the County of Los Angeles, and is subject to long periods of dry, hot and windy climates, which increase the chance of a fire occurring and predispose the City to large destructive fires. These dry climatic conditions and winds contribute to the rapid spread of even small fires originating in moderate density housing or vegetation. These fires spread very quickly and create a need for adequate emergency responder radio coverage. The geographic layout and contours of the City of Monrovia create barriers for accessibility for fire suppression forces. Due to the City's close proximity to major fault lines, there is a significant possibility for multiple fires spreading out of control due to ruptured gas lines and multiple structural collapses. Because of the major earthquake hazard, adequate emergency responder radio coverage is necessary for meeting the City's life safety needs.

§ 15.20.380 RESPONSIBILITY-VIOLATIONS.

~~The expense of each response or any action by the Monrovia Fire Department which is the result of a violation of the Fire Code, or any damage caused by malicious mischief, or any action determined to be intentional or negligent requiring any response, assistance, or corrective or preventative action conducted by Fire Department personnel, shall be a charge against the responsible person whose violation or action caused the Fire Department response or action. The expense of such response or action shall constitute a debt of such person and the Fire Chief shall keep an itemized account of said expenses. The Fire Department shall give notice of said expenses to such persons and a hearing as to the validity and amount of such charge shall be conducted before an impartial Hearing Officer within 30 days, if requested in writing within ten days of the date of such notice. The Hearing Officer's determination shall be final. The city may take such actions as are reasonable and necessary to recover such expenses from any and all responsible persons.~~

Any person, firm, entity, or corporation violating any of the Fire Code or failing to comply with any of the mandatory requirements of the Fire Code shall be guilty of a misdemeanor and upon conviction thereof shall be punished as provided in Section 1.16.010 of this Code. Each such violator shall be guilty of a separate offense for each and every day during any portion of which any violation of any provision of the Fire Code, or any failure to comply with a mandatory requirement of the Fire Code, is committed, continued or permitted to continue by any such violator, and he or she shall be punished accordingly.

NOTE: Renumbering only. Administrative and no substantive change to the Uniform Fire Code.

§ 15.20.390 RESPONSIBILITY.

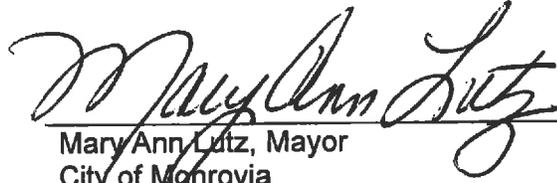
The expense of each response or any action by the Monrovia Fire Department which is the result of a violation of the Fire Code, or any damage caused by malicious mischief, or any action determined to be intentional or negligent requiring any response, assistance, or corrective or preventative action conducted by Fire Department personnel, shall be a charge against the responsible person whose violation or action caused the Fire Department response or action. The expense of such response or action shall constitute a debt of such person and the Fire Chief shall keep an itemized account of said expenses. The Fire Department shall give notice of said expenses to such persons and a hearing as to the validity and

amount of such charge shall be conducted before an impartial Hearing Officer within 30 days, if requested in writing within ten days of the date of such notice. The Hearing Officer's determination shall be final. The city may take such actions as are reasonable and necessary to recover such expenses from any and all responsible persons.

NOTE: Renumbering only. Administrative and no substantive change to the Uniform Fire Code

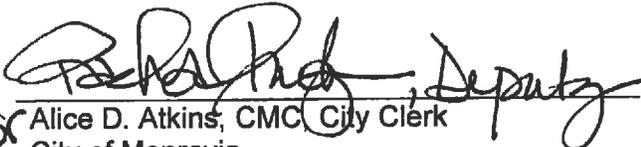
INTRODUCED this 5th day of November, 2013.

PASSED, APPROVED, AND ADOPTED this 3rd day of December, 2013.



Mary Ann Lutz, Mayor
City of Monrovia

ATTEST:


for Alice D. Atkins, CMC, City Clerk
City of Monrovia

APPROVED AS TO FORM:



Craig A. Steele, City Attorney
City of Monrovia

STATE OF CALIFORNIA)
COUNTY OF LOS ANGELES) §
CITY OF MONROVIA)

I, RACHAEL A. HUGHES, Deputy City Clerk of the City of Monrovia, California, do hereby certify that the foregoing is a full, true and correct copy of Ordinance No. 2013-05; It has been published pursuant to law; was duly adopted and passed at a regular meeting of the Monrovia City Council on the 3rd day of December, 2013, by the following vote:

AYES: Councilmembers Adams, Blackburn, Spicer, Mayor Pro Tem Shevlin, Mayor Lutz

NOES:

ABSTAIN:

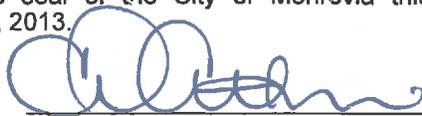
ABSENT:

ATTEST:


for Alice D. Atkins, CMC, City Clerk
City of Monrovia

I, Alice D. Atkins, CMC, City Clerk of the City of Monrovia, County of Los Angeles and State of California, do hereby certify the foregoing to be a full, true and correct copy as the same appears of record, and that I have carefully compared the same with the original.

IN WITNESS WHEREOF, I have hereunto set my hand and affixed the seal of the City of Monrovia this 9th day of December, 2013.



Alice D. Atkins, CMC, City Clerk, City of Monrovia