Introduced by: _____

ORDINANCE NO. _____

**AN ORDINANCE OF THE CITY OF PASADENA ADOPTING TITLE 24 OF THE CALIFFORNIA CODE OF REGULATIONS INCORPORATING THE 2013 CALIFORNIA BUILDING CODE AND APPENDIX CHAPTERS C, D, H, I AND J; THE 2013 CALIFORNIA RESIDENTIAL BUILDING CODE AND APPENDIX E, G AND H; THE 2013 CALIFORNIA MECHANICAL CODE; THE 2013 CALIFORNIA PLUMBING CODE; THE 2013 CALIFORNIA ELECTRICAL CODE, THE 2013 CALIFORNIA FIRE CODE; AND THE 2013 CALIFORNIA GREEN BUILDING STANDARDS CODE**

Whereas the City of Pasadena is adopting the 2013 editions of the California Building Code, Residential Building Code, Fire Code and Green Building Standards Code and is making certain amendments thereto; and

Whereas State law requires that a city must adopt specific findings as to the topographic, geological, and climatic conditions to justify the amendment to these codes;

Now Therefore, the City Council of the City of Pasadena finds as follows:

1.With respect to the amendments to the state code as set forth in Sections 14.04.102, 110, 115, 258, and 315 below,

**Justification: Topographic and Climatic**. Pasadena's hillside areas have narrow and winding access roads, which makes timely response by large fire suppression vehicles difficult. Additionally, long periods of dry, hot weather, combined with unpredictable seasonal winds (Santa Ana wind conditions) result in increased exposure to fire risk. These amendments prohibit the use of wood as exterior wall and roof covering material in very high, high and moderate fire hazard areas and require other exterior wall finishes and roofing materials to have a class A assembly. This will reduce the potential for rapid spread of fire throughout the city during periods of strong seasonal winds.

2. With respect to the amendments to the state codes as set forth in Section 14.04.400 below,

**Justification Climatic:** Because of the risk of delays in fire rescue response time due to traffic congestion and due to the high number of swimming pools within close proximity to small children because of local climate which makes pool ownership desirable, pool barriers are necessary. Additionally, the amendments correct an administrative error in the State's adoption which intended to provide pool barriers. The

amendments are consistent with barrier requirements previously in force in the City of Pasadena.

3. With respect to the amendments to the state codes as set forth in Sections 14.04.120, 130, 140, 145, 147, 150, 155, 160, 170, 175, 180, 205, 210, 215, 216, 220, 225, 235, 260, 267, 275, 282, 285, 290, 295, and 305 below,

**Justification: Geologic.** Pasadena is situated primarily on the Sierra Madre fault near the base of the San Gabriel Mountains. Other faults near or in the city are the Eagle Rock fault (originally termed the San Rafael fault), Verdugo Hills fault, and Elysian Park fault. Said faults are generally considered major Southern California earthquake faults which may experience rupture at any time. Review of damage resulting from the January 17, 1994 Northridge Earthquake revealed significant damage to many buildings throughout the Southern California region. The referenced amendments are necessary to implement improved design standards, to use current recognized standards and referenced recently published, and to reduce the risk of personal injury, loss of life and property damage within structures.

4. With respect to the amendments to the state code as set forth in Sections 14.04.165, 185, 190, 217, 270, and 280 below,

**Justification: 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.

5. With respect to the amendments to the state code as set forth in Sections14.04.500, 501, 502, 504, 506, 508, 510, 512, 514, 516, and 518 below,

**Justification: Local environmental/Climatic Conditions.** The greater Los Angeles region is a densely populated area having residential buildings constructed within a region where environmental resources are scarce due to varying and occasional immoderate temperatures and weather conditions. The proposed modification to require higher efficiencies of energy usage and greater beneficial use of environmental material will be achieved with the proposed expansion of the Mandatory and Voluntary requirements and therefore need to be incorporated into the code to assure that new

residential and non-residential buildings are designed and constructed in accordance with the scope and objectives of the California Green Building Standards Code.

6. With respect to the amendments to the state fire code as set forth in section 14.28.020 items 3, 4, 26, 27, 28, 29 and 31 below, the proposed amendments are required due to ***topographic*** conditions. The increased use of decreased property line setback development and increased development densities increase the community risk from fire or hazardous materials spread and the number of persons potentially endangered. The proposed amendments allow for either increased review and mitigation, or decreased hazard to the community, or both.

7. With respect to the amendments to the state fire code as set forth in section 14.28.020 items 9, 10, 16, 19, and 20 below, the proposed amendments are required due to ***topographic*** and ***climatic*** conditions. Narrow and winding access roads to hillside areas, and hot, dry weather and seasonal winds result in increased exposure to fire risk. The increased use of decreased property line setback development and increased development densities increase the community risk from fire spread and the number of persons potentially endangered. The proposed amendments allow for either increased review and mitigation, or decreased hazard to the community through increased use of automatic fire extinguishing systems and/or the decreased use of combustible exterior materials, or both.

8. With respect to the amendments to the state fire code as set forth in section 14.28.020 items 11and 12 below, the proposed amendments are required due to ***geologic*** conditions. Pasadena is located within a seismically active zone and is near several active fault lines. Residential domestic water supplies are generally not as seismically resilient as fire sprinkler systems. For example, in the event a porcelain fixture broke in an earthquake, a fire suppression system using a combination water supply could be compromised, whereas a fire sprinkler system with a dedicated supply could still be functional. This amendment increases the survivability of fire sprinkler systems. The proposed amendments allow for either increased review and mitigation, decreased hazard to the community by allowing for limited leakage or other water loss in calculations and disallowing a more vulnerable type of system, or both.

9. With respect to the amendments to the state fire code as set forth in section 14.28.020 items 8 and 15 below, the proposed amendments are required due to ***topographic*** conditions. The increased use of decreased property line setback development, increased use of light weight construction, increased intermingling of hazardous occupancies with less hazardous occupancies that have been historically separated, and increased development densities increase the community risk from fire spread and other hazardous conditions and the number of persons potentially endangered. The proposed amendments allow for the increased efficacy and safety of the response to emergencies by ensuring acceptable emergency communications and thereby improving the safety of both the community and emergency responders.

10. With respect to the amendments to the state fire code as set forth in section 14.28.020 item 33 below, the proposed amendments are required due to ***topographic*** conditions. The increased use of decreased property line setback development, increased use of light weight construction, increased intermingling of hazardous occupancies with less hazardous occupancies that have been historically separated, and increased development densities increase the community risk from fire spread and other hazardous conditions and the number of persons potentially endangered. This amendment increases public and firefighter safety by increasing the likelihood that automatic fire extinguishing systems will have sufficient water flow capacity to contain or extinguish significant fires before the fire extends to adjacent areas or structures.

11. With respect to the amendments to the state fire code as set forth in section 14.28.020 item 11 below, the proposed amendment is required due to ***geologic*** conditions. Due to the City's significant use of groundwater, fire suppression systems experience an increased rate of mineral deposition due to dissolved minerals in the groundwater. This amendment mitigates the potential decrease in water flow caused by mineral deposition.

12. With respect to the amendment to the state fire code as set forth in section 14.28.020 items 13 and 17 below, the proposed amendments are required due to ***topographic*** conditions. The increased use of decreased property line setback development and increased development densities increase the community risk from fire spread and increase the number of persons potentially endangered, and limits the space available in which emergency responders may operate effectively. Early and effective evacuation of building occupants increases the efficacy of fire attack and decreases the risk of fire spread. The proposed amendments allow for either increased review and mitigation, or decreased hazard to the community, or both.

13. With respect to the amendment to the state fire code as set forth in section 14.28.020 item 24 below, the proposed amendments are required due to ***topographic*** conditions. The increased use of decreased property line setback development increases the community risk from fire spread. Smaller flammable and combustible liquid tanks are allowed by code to be placed relatively close to buildings and property lines. The installation of overfill prevention decreases the likelihood that spills during the filling process will endanger structures on the same or adjacent properties.

14. With respect to the amendment to the state fire code as set forth in section 14.28.020 item 25 below, the proposed amendments are required due to ***topographic*** conditions. The increased use of decreased property line setback development increases the community risk from fire spread. Smaller flammable and combustible liquid tanks are allowed by code to be placed relatively close to buildings and property lines. Allowing the emergency venting of flammable and combustible vapors within vaults greatly increases the likelihood of vapor explosions within the vault. Allowing the use of long-bolt manhole covers as a means of emergency venting creates a hazard to anyone nearby the manhole should an emergency release occur without warning. Disallowing the practices of in-vault venting and the use of long-bolt manhole covers

increases the public safety by requiring venting to occur at a safe location.

15. For sections not specified above, no express findings are required under the requirements established by sections 17958, 17958.5, and 17958.7 of the California Health and Safety Code as these amendments are administrative in nature, merely provide clarification of existing California Code requirement, or address matters outside the scope of the above sections.

Accordingly, the People of the City of Pasadena ordain as follows:

**SECTION 1.** This ordinance, due to its length and corresponding publication cost will be published by title and summary as permitted by Section 508 of the Charter of the City of Pasadena. The approved summary of this ordinance is as follows:

**"Summary**

Ordinance No. _____. The ordinance adopts the 2013 California Building Code, the 2013 California Residential Code, the 2013 California Mechanical Code, the 2013 California Plumbing Code, the 2013 California Electrical Code, the 2013 California Fire Code and the 2013 California Green Building Standards Code as required by state law. The ordinance also provides for some amendments to these codes to accommodate special topographic, geological, and climatic conditions found in Pasadena consistent with state law. Ordinance No. ____ shall take effect 30 days after its publication by title and summary. The full text of the ordinance is on file in the City Clerk's Office."

**SECTION 2.** Chapter 14.03 of the Pasadena Municipal Code is amended as follows:

**A.** By amending Section 14.03.010 to read as follows:

**14.03.010 - Adoption and filing**

Except as herein provided by specific changes, the administrative, organizational and enforcement for the technical codes which regulate the site preparation and construction, alteration, moving, demolition, repair, use and occupancy of buildings, structures and building service equipment within the city shall be in accordance with the provisions and in the manner prescribed in administrative provisions of the 2013 Edition of the California Building Code, as published by the California State Building Standards Commission.

**B.** By amending Section 14.03.020 to read as follows:

**14.03.020 - Section 101.1 of Chapter 1 Division II amended Title.**

This ordinance shall be known and cited as the Pasadena Building Code for Building Construction Regulation, and will be referred to herein as this Code.

**C.** By amending Section 14.03.030 to read as follows:

**14.03.030 - Chapter 1 Division II Section 103.1 of the 2013 California Building Code, creation of enforcement agency is amended as follows:**

There has been established heretofore in this jurisdiction a code enforcement agency entitled, The Planning and Community Development Department which employs a Building Official who shall be authorized to enforce the provisions of this code.

**SECTION 3.** Chapter 14.04 of the Pasadena Municipal Code is hereby repealed in its entirety and rewritten as follows:

**A.** Section 14.04.010 to read as follows:

**14.04.010 - Adoption and filing.**

California Building Codes adopted. California Code of Regulation Title 24 part 1-12. The 2013 California Building Code Chapters 1-35 and Appendix Chapters , C, H, I, and J; the 2013 California Residential Code and Appendix Chapters E, G, H, the 2013 California Green Building Standards Code, the 2013 California Electrical Code; The 2013 California Mechanical Code; the 2013 California Plumbing Code, and 2013 California Fire Code all as published by the California Building Standards Commission and as amended by the State Department of Housing And Community Development (HCD), the Division of the State Architect/Access and Compliance (DSA/AC), and the State Office of Statewide Health, Planning and Development (OSHPD), The Office of the State Fire Marshal: all as published by the International Code Council. One copy of all of the above publications is on file for public inspection and is hereby adopted with the same force and affect as though set out herein in full.

**B.** Section 14.04.015 to read as follows:

**14.04.015 - Section 105.2.1 is added to Chapter 1 Division II Section 105.2 of the California Building Code to read as follows:**

A zoning permit may be required for items exempted from building permit requirements under Chapter 1 Division II Section 105.2. Exempted work shall not violate any provisions of this code, Federal, State, Local laws, or regulations.

**C.** Section 14.04.030 to read as follows:

**14.04.030 Violations.**

All sections in the codes referenced in Section 14.04.010 herein pertaining to violations are amended in their entirety to read as follows:

It shall be unlawful for any person, firm or corporation to erect, construct, enlarge, alter, repair, move, improve, remove, convert, or demolish, equip, use, occupy, or maintain

any building or structure in the City, or cause same to be done, contrary to or in violation of any of the provisions of this chapter. Any person, firm, or corporation violating any of the provisions of this Ordinance, 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 this Ordinance is committed, continued, or permitted, and upon conviction of any such violation such persons shall be punished by a fine of not more than one thousand dollars ($1,000) or by imprisonment for not more than one (1) year, or by both such fine and imprisonment.

In addition to the above penalty provisions, violation of any of the provisions of this chapter may be subject to the administrative proceedings set forth in Chapter 1.25 of this code.

**D.** Section 14.04.040 to read as follows:

**14.04.040 Board of appeals.**

All sections in the respective codes pertaining to the Board of Appeals are hereby amended in their entirety to read as follows:

In order to hear and decide appeals or orders and determine the suitability of alternate materials and methods of construction and to provide for reasonable interpretations of the provisions of these Codes, there shall be and there is hereby created a Board of Appeals, composed of the Mayor and the City Council.

The city clerk shall be the secretary to the Board. The Board may adopt reasonable rules and regulations for conducting its investigations and shall render all its decisions and findings on contested matters, in writing to the building official, with a duplicate copy thereof to any appellant or contestant affected by any such decision of findings, and may recommend to the City Council such new legislation, if any, as is consistent therewith.

The City Council may prescribe by resolution, to employ at the cost and expense of the City, such qualified individuals as the Board, in its discretion, may deem reasonably necessary in order to assist it in its investigations and in making its findings and decisions.

**E.** Section 14.04.050 to read as follows:

**14.04.050 Fees.**

The council shall by resolution adopt a schedule of fees for the permits issued pursuant hereto.

**F.** Section 14.04.080 to read as follows:

**14.04.080 Moved structures.**

Section 3410 of the 2013 edition of the California Building Code is amended by adding the following:

Before a permit is issued, the building-mover shall furnish and file with the City Clerk, a good and sufficient bond in the principal sum of $5,000.00 in favor of the City of Pasadena for the benefit of any person, firm or corporation who may be damaged directly by the moving of said building or structure, provided that any person, firm or corporation engaged in the business of moving buildings may file with the City Clerk a surety bond in the sum of $10,000.00 indemnifying the City for the purposes, and in that event such person, firm or corporation need not file the $5,000.00 bond herein above required for any single moving operation.

**G.** Amendments to the 2013 California Building Code Sections 14.04.100 through 14.04.285 to read as follows:

**14.04.100 - Changes and additions to the adopted codes.**

Pursuant to the Health and Safety Code Sections 17358.5 and 17958.7, the City establishes the following local modifications. The requisite findings if applicable for such requirements are set forth in the ordinance fact sheet accompanying this ordinance.

**14.04.102 - Section 701A.1 of the 2013 edition of the California Building Code is amended to read as follows**:

Scope. This chapter applies to building materials, systems and /or assemblies used in the exterior design and construction of new buildings, additions and alterations located within a Wildland-Urban Interface Fire Area as defined in Section 702A.

**14.04.110 - Section 1505.1 of the 2013 California Building Code is amended to read as follows:**

General. Roof assemblies shall be divided into the classes defined below. Class A, and B and C roof assemblies and roof coverings required to be listed by this section shall be tested in accordance with ASTM E 108 or UL 790. In addition, fire-retardant-treated wood roof coverings shall be tested in accordance with ASTM D 2898. The minimum roof coverings installed on buildings shall comply with Table 1505.1 based on the type of construction of the building. All roof assemblies and roof coverings shall be of not less than Class B. No wood roof covering material shall be installed on any structure located in the very high, high and moderate fire hazard zones as identified by the Pasadena Fire Department.

Exception: - In the moderate fire hazard zone, the fire code official may, upon a showing of good cause and necessity, approved the use of fire-resistive wood as part of class A listed assemblies, and may require additional mitigation as warranted, for the repair or maintenance of existing structures.
- Skylights and sloped glazing that comply with Chapter 24 or Section 2610.

**14.04.115 - Section 1505.6 of the 2013 Edition of the California Building Code is amended to read as follows:**

Fire-retardant-treated wood shingles and shakes. Fire-retardant-treated wood shingles and shakes shall not be installed in the very high, high and moderate fire zones. Fire-retardant-treated wood shakes and shingles are wood shakes and shingles complying with UBC Standard 15-3 or 15-4 which are impregnated by the full-cell vacuum-pressure process with fire-retardant chemicals, and which have been qualified by UBC Standard 15-2 for use on Class A, and B or C roofs.
Fire-retardant-treated wood shakes and shingles shall comply with ICC-ES EG107 and with the weathering requirements contained in Health and Safety Code Section 13132.7(j). Each bundle shall bear labels from an ICC accredited quality control agency identifying their roof-covering classification and indicating their compliance with ICC-ES EGI07 and with the weathering requirements contained in Health and Safety Code Section 13132.7(j).

Health and Safety Code Section 13132.7(j). No wood roof covering materials shall be sold or applied in this state unless both of the following conditions are met:

(1) The materials have been approved and listed by the State Fire Marshal as complying with the requirements of this section.

(2) The materials have passed at least five years of the 10-year natural weathering test. The 10-year natural weathering test required by this subdivision shall be conducted in accordance with standard 15-2 of the 1994 edition of the Uniform Building Code at a testing facility recognized by the State Fire Marshal.

Exception: In the moderate fire hazard zone, the fire code official may, upon a showing of good cause and necessity, approve the use of fire-resistive wood as part of class A listed assemblies, and may require additional mitigation as warranted, for the repair or maintenance of existing structures.

**14.04.120 - Section 1510 of the 2013 California Building Code is amended by adding a section 1510.7 entitled roof sheathing to read as follows:**

When finish roofing material is removed to the existing open space sheathing, a minimum of 3/8-inch thick plywood sheathing shall be installed. The new sheathing shall comply with the requirements of the California Building Code. The sheathing shall be installed such that the edges align over rafters and individual spaced sheathing boards. The sheathing shall be attached to the existing spaced sheathing with 6d common nails

at 6 inches (147mm) on center at supported edges and 6d common nails at 12 inches (294mm) on center at intermediate supports.

**14.04.130 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.

**14.04.140 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.

**14.04.145 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.

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.

**14.04.147 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.

**4.04.150 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 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.

**14.04.155 Table 1705.3 of the 2013 Edition of the California Building Code is amended to read as follows:**

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

| VERIFICATION AND INSPECTION | CONTINOUS | 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:_D.9.2 8.1.3, 21.1.8 | 1908.5, 1909.1 |
| 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. Adhesive anchors installed in horizontally or upwardly inclined orientations to resist sustained tension loads. | X | | ACI 318:D.9.2.4 | – |
| a.b. Mechanical anchors and adhesive anchors not defined in 4.a. | | 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.)*

**14.04.160. 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.

**14.04.165. 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.

**14.04.170. 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.

**14.04.175. 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 place at the top and bottom of the footings as shown in Figure 1809.3.

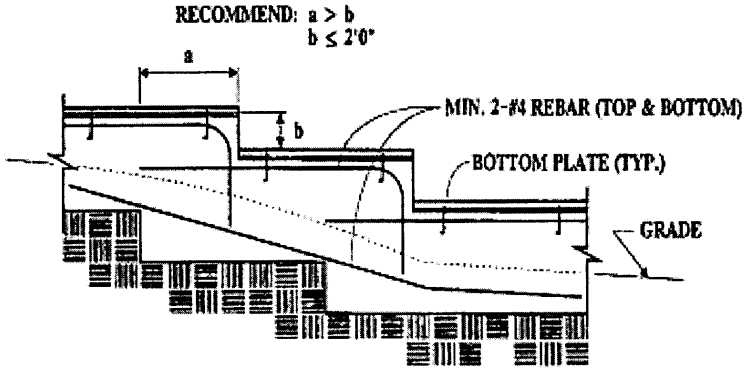


**FIGURE 1809.3**
**STEPPED FOOTING**

**14.04.180. 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.

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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.

**14.04.185. 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.

**14.04.190. 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.

**14.04.205. 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.

**14.04.210. 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 cementious 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, aA 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.

**14.04.215. 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 12.6.4.9 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, $\varphi P_n$, 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, $\varphi P_n$, 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 21.11.6.1as 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.

**14.04.216. 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.

**14.04.217. 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.

**14.04.220. 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.

**14.04.225. 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.

**14.04.235. 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:

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