

Council Meeting of
November 23, 2010
PUBLIC HEARING

Honorable Mayor and Members
of the City Council
City Hall
Torrance, California

Members of the Council:

**SUBJECT: Local Amendments to California Building Codes 2010 Resolution,
First Reading of Ordinance – California Building Codes 2010.**

RECOMMENDATION

The Community Development Director recommends that City Council:

1. Adopt a resolution with Finding of Fact in support of certain City of Torrance local amendments to the California Building Codes, 2010 Edition;
2. Hold the first reading of a proposed ordinance adopting the California Building Codes 2010 with the local amendments; and,
3. Approve publication of an Ordinance Summary.

Funding

Not applicable.

BACKGROUND

Typically every three years, a family of “model” or “uniform” construction codes is published by a group of recognized, independent organizations. Memberships of these organizations include building officials, engineers, architects, industry representatives, and others. Government officials and the building industry acknowledge these organizations for their expertise in specific disciplines of construction.

The “model codes” are then reviewed by the State and adopted with amendments to become the California Building Standards Code. The State publishes the amended code and it becomes effective 180 days after publication. The 2007 California Building Standards Code was published in July 2010 and will become effective January 1, 2011. The 2007 California Building Standards Code is comprised of several individual codes

that include the 2010 editions of the California Building Code, California Electrical Code, California Plumbing Code and the California Mechanical Code. This cycle will include two new codes, the 2010 California Residential Code and the 2010 California Green Building Code.

The new California Residential Code applies to one and two family dwelling units. The significant change triggered by this new code is the requirement that fire sprinklers be installed in all new single family homes for which building permits are applied for after January 1, 2011.

The new California Green Building Code will also apply to all new buildings for which building permits are applied for after January 1, 2011. This new code establishes minimum requirements for all new buildings in the following five areas: 1) site planning and design, 2) energy efficiency, 3) water efficiency and conservation, 4) material conservation and resource efficiency, and 5) environmental quality. Compliance to the minimum requirements is set at three different levels. A minimum mandatory level is set for all new residential and commercial buildings with two voluntary levels above that, for applicants who choose to comply to higher standards.

Local jurisdictions, in turn, may amend and adopt the California Building Standards Code after it is published. The Building Construction Code for City of Torrance is an amended version of the State's code. Accordingly, the City Council amends approximately every three years the Torrance Municipal Code to incorporate the California Building Standards Code with local amendments. This process was last completed in 2007.

ANALYSIS

The process of reviewing and revising, amending and adopting these construction codes is a continuous effort to improve and protect the public safety in the built environment. These codes result in the California Building Standards Code which is "adopted by reference" to form the basis for the City of Torrance Building Construction Codes. To adopt by reference, state law requires a public hearing take place at least two weeks after the setting of a hearing date. This process gives the building industry time to review the City's proposed building construction code prior to the public hearing.

Adoption of the most recent code by local jurisdictions is more than simply complying with a State mandate, it is an opportunity for the local jurisdiction to review, amend, and update the State code with respect to local conditions. Each jurisdiction can amend the California Building Standards Code with more restrictive requirements based on local climatic, topographical, environmental and geological conditions.

In this code adoption cycle, the staff recommends the City Council amend the California Building Standards Code to account for local unique conditions as allowed by state law. The amendments incorporate state of the art construction and design methods based on the latest research and standards. Following is a list of notable changes due to local amendments to the California Building Code:

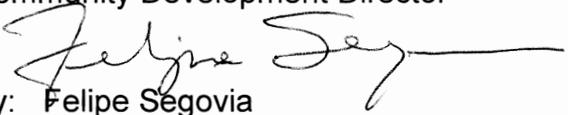
- * Seismic requirements were revised to reflect the most up to date design standards based on research by various organizations. Amendments were made to the design standards and procedures for steel, concrete and wood construction.
- * Exiting requirements were amended for buildings that have usable floor area 40 feet above fire department access or 4 stories in height.
- * Fire sprinkler requirements were amended to be more restrictive for various occupancies to account for local climatic and geological conditions.
- * Foundation requirements were made more restrictive to account for local expansive soil conditions. The requirement for soil investigations was also made more restrictive due to the City's proximity to earthquake faults and hillside conditions within the city.
- * The scope of construction projects exempted from the building permit requirements was amended to be more restrictive to account for local conditions.
- * Requirements for smoke-proof exiting were modified to be more restrictive in certain types of buildings due to local climatic conditions and the City's proximity to earthquake faults.

State law requires that the City Council make specific findings for all City amendments more restrictive than the California Building Standards Code requirements. These findings must be based on the unique climatic, topographical, environmental or geological local conditions. The Report of the Community Development Director dated November 1, 2010 (Attachment C) details these findings. This report will be filed with the California Building Standards Commission as required by state law.

In conclusion, the tri-annual process results in a truly "living" family of construction codes. As a result, the City of Torrance Building Construction Code represents the most current, proven, and effective set of minimum regulations for safe new buildings.

Respectfully submitted,

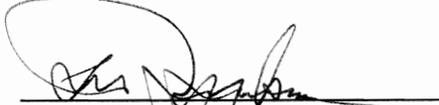
JEFFERY W. GIBSON
Community Development Director


By: Felipe Segovia
Building Regulations Administrator

CONCUR:



Jeffery W. Gibson
Community Development Director



LeRoy J. Jackson
City Manager

Attachments:

- A) Resolution
- B) *Ordinance
- C) *Report of the Community Development director dated November 1, 2010.
- D) Ordinance summary

*Limited distribution (available at the City Clerk's Office for review)

RESOLUTION NO. 2011- _____**A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF TORRANCE CALIFORNIA FINDING AND DECLARING THE EXISTENCE OF UNIQUE GEOLOGIC, TOPOGRAPHIC, ENVIRONMENTAL, AND CLIMATIC CONDITIONS IN THE CITY OF TORRANCE JUSTIFYING CERTAIN AMENDMENTS TO THE CALIFORNIA BUILDING STANDARDS CODE OF THE STATE OF CALIFORNIA**

WHEREAS, the State of California has adopted certain construction codes which must in turn be adopted or utilized by each city or county; and

WHEREAS, certain of the provisions of the California Building Standards Code are inappropriate for use in the City of Torrance because of unique geologic, topographic, environmental, or climatic conditions prevailing within the City; and

WHEREAS, the State law provides for certain amendments to the California Building Standards Code provided findings of necessity can be made.

NOW, THEREFORE, THE CITY COUNCIL OF THE CITY OF TORRANCE RESOLVES, FINDS, AND DECLARES AS FOLLOWS:

1. That there are within the City of Torrance certain unique geologic, topographic, environmental, or climatic conditions which are not sufficiently treated by the California Building Standards Code Adopted by the State of California.
2. The report of the Building and Safety Director of the City of Torrance, dated November 1, 2010 incorporated herein as though fully set forth, specifies the reasons for making certain amendments to the California Building Standards Code, and said report is adopted by this Council as its own report and all of the reasons for amendments of the California building Standards Code are found to be true and correct.
3. The Community Development Director is directed to file with the California Building Standards Commission a certified copy of the Resolution and the attached report, and to maintain on file in his office a copy of this Resolution and the report for examination as public records.

INTRODUCED, APPROVED, AND ADOPTED this _____, 2010.

APPROVED AS TO FORM:
JOHN L. FELLOWS III, City Attorney

By _____
Patrick Sullivan, Assistant City Attorney

Mayor Frank Scotto

ATTEST:

Sue Herbers, CMC, City Clerk

ORDINANCE _____

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF TORRANCE AMENDING CHAPTER 1, 2, 3, 9, AND ADDITING NEW CHAPTERS 12 AND 13 OF DIVISION 8 OF THE TORRANCE MUNICIPAL CODE. ALL OF WHICH ADOPT OR AMEND THE 2010 EDITION OF THE CALIFORNIA BUILDING CODE VOLUMES 1 AND 2 WITH APPENDICES, THE 2010 EDITION OF THE CALIFORNIA ELECTRICAL CODE, THE 2010 EDITION OF THE CALIFORNIA PLUMBING CODE WITH APPENDICES, THE 2010 EDITION OF THE CALIFORNIA MECHANICAL CODE WITH APPENDICES, THE 2010 EDITION OF THE CALIFORNIA RESIDENTIAL CODE, AND THE 2010 EDITION OF THE CALIFORNIA GREEN BUILDING STANDARDS CODE.

The City Council of the City of Torrance does ordain as follows:

SECTION 1

That Article 1 of Chapter 1 of Division 8 of the Torrance Municipal Code is hereby repealed in its entirety and a new Article 1 of Chapter 1 of Division 8, is added in its entirety to read as follows:

"ARTICLE 1 CALIFORNIA BUILDING CODE**Section 81.1.1 Adoption of California Building Code.**

Those certain documents in book form entitled "California Building Code Volumes 1 and 2 with Appendices," 2010 Edition, published by the International Code Council and the California Building Standards Commission, not less than one (1) copy each of which have been and are now filed in the office of the City Clerk of the City of Torrance, save and except such portions as are hereinafter deleted, modified, or amended by this ordinance, are hereby adopted by the City Council of the City of Torrance as the Building Code and Standards of the City of Torrance."

SECTION 2

Section 81.2.1 Authority. [Administrative]

A new section 104.12 is added to the California Building Code, 2010 Edition, to read in its entirety as follows:

“104.12 Authority. The Building Official shall have the authority to adopt rules and regulations to clarify and interpret the provisions of this ordinance. The Building Official may also approve variations and omissions when such variation or omissions are not detrimental to the life, health, safety, or welfare of the public, and do not violate the intent or purpose of this code.”

Section 81.2.2 DEFINITIONS. [Administrative]

Section 403.1.1 of the California Building Code, 2010 Edition, is hereby amended to include the following:

“HIGH RISE BUILDING“ as used in this code:

1. “Existing high-rise structure” means a high-rise structure, the construction of which is commenced or completed prior to July 1, 1974.
2. “High-rise structure” means every building of any type of construction or occupancy having floors used for human occupancy located more than 40 feet above the lowest level having building access (see Section 403.1.2), except buildings used as hospitals as defined in Health and Safety Code Section 1250.
3. “New high-rise structure” means a high-rise structure, the construction of which is commenced on or after July 1, 1974.”

Section 81.2.3 Exempted Work. [Geological]

Section 105.2 of the California Building Code, 2010 Edition, is hereby deleted and a new section 105.2 is added to read in its entirety as follows:

“105.2 Exempted Work.

A building permit shall not be required for the following:

1. One-story detached accessory buildings used as tool and storage sheds, playhouses and similar uses, provided the floor area does not exceed 60 square feet.
2. Prefabricated one-story detached accessory metal buildings used as tool or storage sheds, provided the floor area does not exceed 120 square feet.

3. Nonfixed and movable fixtures, cases, racks, counters and partitions not over 5 feet 9 inches (1753 mm) in height.
4. Retaining walls which are not over four (4) feet in height measured from the bottom of the footing to the top of the wall unless supporting a surcharge or impounding Class I, II, or III-A Liquids.
5. Water tanks supported directly upon grade if the capacity does not exceed 5,000 gallons and the ratio of height diameter or width does not exceed two (2) to one (1).
6. Painting, papering and similar finish work.
7. Temporary motion picture, television and theater stage sets and scenery.
8. Window awnings supported by an exterior wall that do not project more than 54 inches (1372 mm) from the exterior wall and do not require additional support of Group R-3 and U occupancies.
9. Prefabricated swimming pools accessory to a Group R, Division 3 Occupancy in which the pool walls are entirely above the adjacent grade, and the pool water level is a maximum 12 inches high and does not exceed 5,000 gallons.
10. Signal receiving antennae not more than twenty-four (24) inches in diameter.
11. Fences not over three (3) feet high.
12. Sidewalks and driveways not more than 30 inches above adjacent grade and not over any basement or story below and are not part of an accessible route.
13. Swings and other playground equipment accessory to detached one- and two-family dwellings.

Electrical:

Repairs and maintenance: Minor repair work, including the replacement of lamps or the connection of approved portable electrical equipment to approved permanently installed receptacles.

Radio and television transmitting stations: The provisions of this code shall not apply to electrical equipment used for radio and television transmissions, but do not apply to equipment and wiring for a power supply and the installations of towers and antennas.

Temporary testing systems: A permit shall not be required for the installation of any temporary system required for the testing or servicing of electrical equipment or apparatus.

Gas:

1. Portable heating appliance
2. Replacement of any minor part that does not alter approval of equipment or make such equipment unsafe.

Mechanical:

1. Portable heating appliance.
2. Portable ventilation equipment.
3. Portable cooling unit.
4. Steam, hot or chilled water piping within any heating or cooling equipment regulated by this code.
5. Replacement of any part that does not alter its approval or make it unsafe.
6. Portable evaporative cooler.
7. Self-contained refrigeration system containing 10 pounds (5 kg) or less of refrigerant and actuated by motors of 1 horsepower (746 W) or less.

Plumbing:

1. The stopping of leaks in drains, water, soil, waste or vent pipe, provided, however, that if any concealed trap, drain pipe, water, soil, waste or vent pipe becomes defective and it becomes necessary to remove and replace the same with the new material, such work shall be considered as new work and a permit shall be obtained and inspection made as provided in this code.
2. The cleaning of stoppages of the repairing of leaks in pipes, valves or fixtures and the removal and reinstallation of water closets, provided such repairs do not involve or require the replacement or rearrangement of valves, pipes or fixtures.

Unless otherwise exempted by the Uniform Building Code, separate plumbing, electrical, and mechanical permits will be required for the above exempted items.

Exemption from the permit requirements of this code shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction.”

Section 81.2.4 Special Certificate of Occupancy. [Administrative]

Section 111.5 of the California Building Code, 2010 Edition, is hereby added to read in its entirety as follows:

“111.5.1 Issuance. A Special Certificate of Occupancy may be issued for any building or structure in Groups A to U, inclusive, at the request of any person, firm, corporation owning property, or bona fide prospective purchaser, which the Special Certificate of Occupancy will describe.

111.5.2 Fees. No fee shall be charged for a Special Certificate of Occupancy where such request is made within six (6) months of the final building inspection. All other requests for a Special Certificate of Occupancy shall pay to the City of Torrance, a fee of Forty Dollars (\$40.00) for each type of inspection, prior to the issuance of such certificate.

111.5.3 Waiver. Each applicant for issuance of a Special Certificate of Occupancy shall, prior to the issuance of said certificate, execute a written waiver of liability on forms provided by the Building & Safety Director.”

Section 81.2.5 Fire Ratings Between Similar Occupancies. [Climatic]

Section 508.5 is hereby added to the California Building Code, 2010 Edition, to read in its entirety as follows:

“508.5 Fire Ratings Between Similar Occupancies. Where more than one (1) tenant or owner occupies a building and has the same character of occupancy, such tenants or owners shall be separated by a minimum of one-hour fire resistive construction, continuous from the ground to the roof.

Exceptions:

1. Where all portions of the building, including attics, are protected by an automatic fire extinguishing system in accordance with NFPA Standards.
2. In all Type I buildings.
3. In multi-story buildings, separation walls may terminate at floors provided the floor system is of a one (1) hour minimum fire resistive construction.”

Section 81.2.6 Smoke Detectors in Residential Occupancies. [Climatic]

Section 907.2.11.6 of the California Building Code, 2010 Edition, is hereby added to read in its entirety as follows:

“907.2.11.6 Smoke Detectors. When an existing dwelling unit changes ownership, a battery operated or permanently wired smoke detector system shall

be installed incident to the change of ownership. The installation of State Fire Marshal approved units shall be certified by the owner or installer that the unit is operating in accordance with the manufacturer's instructions. Permanently wired units shall require a separate electrical permit. Receipt of this certification by the City shall be deemed as compliance with this regulation."

Section 81.2.8 Automatic Fire Extinguishing Systems. [Climatic]

Section 903.2 of the California Building Code, 2010 Edition, is hereby amended to read as follows:

903.2.1.2 Group A-2. An automatic sprinkler system shall be provided for Group A-2 occupancies where one of the following conditions exists:

1. The cumulative building floor area exceeds 4,000 square feet (465 m²);
2. The fire area has an occupant load of 100 or more; or
3. The fire area is located on a floor other than the level of exit discharge.

903.2.2 Group B Occupancies.

903.2.2.1 General. An automatic sprinkler system shall be installed in Group B, Occupancies where the floor area exceeds 12,000 square feet on any floor or 12,000 square feet on all floors or in Group B occupancies more than three stories in height. The area of mezzanines shall be included in determining the areas where sprinklers are required.

903.2.2.2 Eating Establishments. An automatic sprinkler system shall be installed throughout every building containing one or more eating establishments with a total accumulative floor area in excess of four thousand (4000) square feet.

903.2.2.3 Group B ambulatory healthcare facilities. An automatic sprinkler system shall be installed throughout all fire areas containing a Group B ambulatory health care facility occupancy when either of the following conditions exists at any time:

1. Four or more care recipients are incapable of self-preservation.
2. One or more care recipients who are incapable of self-preservation are located at other than the level of exit discharge serving such an occupancy.

3. In rooms or areas with special hazards such as laboratories, vocational shops and other such areas where hazardous materials in exempt amounts are used or stored.
4. Throughout any Group E structure greater than 20,000 square feet (1155 m²) in areas, which is separated into two or more buildings by fire walls of less than four-hour fire resistance rating without openings.

903.2.7 Group M. An automatic sprinkler systems shall be provided throughout buildings containing Group M occupancy where one of the following conditions exists:

1. Where a Group M building floor area exceeds 12,000 square feet (1115 m²).
2. Where a Group M fire area is located more than three stories above grade plane.
3. Where the combined area of all Group M fire areas on all floors, including any mezzanines, exceeds 12,000 square feet (1115 m²).
4. A Group M occupancy is used for the display and sale of upholstered furniture.
5. The structure exceeds 12,000 square feet (1115 m²) contains more than one fire area containing a Group M occupancy, and is separated into two or more buildings by fire walls of less than 4-hour fire resistance rating without openings.

903.2.9 Group S-1. An automatic sprinkler system shall be provided throughout all building containing a Group S-1 occupancy where one of the following conditions exists:

1. Where a Group S-1 fire area exceeds 12,000 square feet (1115 m²).
2. Where a Group S-1 fire area is located more than three stories above grade plane.
3. The combined area of all Group S-1 fire areas on all floors, including any mezzanines, exceeds 12,000 square feet (1115 m²).
4. A Group S-1 fire area used for the storage of commercial trucks or buses where the fire area exceeds 5,000 square feet (464 m²).

903.2.10.2 In parking garages over 10,000 square feet in area, incorporated within and part of Group R Occupancies and not otherwise covered by this code or the California Building code.

903.2.11.3 Building 40 feet or more in height. An automatic sprinkler system shall be installed throughout buildings with a floor level having usable floor area that is located 40 feet or four (4) stories above the lowest level of fire department vehicle access.

Exceptions:

1. Airport control towers.
2. Open parking structures.
3. Occupancies in Group F-2.

Section 81.2.9 Power Source for Smoke-Control Systems. [Climatic]

Section 909.11 of the California Building Code, 2010 Edition, is hereby amended to read in its entirety as follows:

“909.11 General. The smoke-control system shall be supplied with two sources of power. Primary power shall be from the normal building power systems. Secondary power shall be from an approved standby source complying Chapter 27 of this code. The standby power source and its transfer switches shall be in a room separate from the normal power transformers and switch-gear and ventilated directly to and from the exterior. The room shall be enclosed with not less than 1-hour fire barriers constructed in accordance with Section 707 or horizontal assemblies constructed in accordance with Section 712, or both.

Transfer to full standby power shall be automatic and within 60 seconds of failure of the primary power. The systems shall comply with the Electrical Code.

Exception: The secondary power is not required for pressurized enclosures in buildings of less than 5 floors used for human occupancy.

Section 81.2.10 Stairs in Smokeproof Enclosures. [Climatic]

Section 909.20.2.6 of the California Building Code, 2010 Edition, is hereby added to read as follows:

“909.20.2.5 Stairs. Stairs in smokeproof enclosures shall be of noncombustible construction.”

Section 81.2.11 Smoke and Heat Vents

910.1 General. Where required by this code or otherwise installed, smoke and heat vents or mechanical smoke exhaust systems and draft curtains shall conform to the requirements of this section.

Exceptions:

1. Frozen food warehouses used solely for storage of Class I and II commodities where protected by an approved automatic sprinkler system.
2. Where areas of buildings are equipped with early suppression fast-response (ESFR) sprinklers, mechanical smoke exhaust system in accordance with Section 910.4 may be required per the Fire Chiefs discretion.

910.2.3.3 Sprinklered Buildings. Where installed in buildings equipped with an approved automatic sprinkler system, smoke and heat vents shall be actuated by an approved fixed-temperature heat-responsive device rated at least 100 degrees above the temperature rating of the fire sprinkler heads.

Section 81.2.12 Stairway to Roof. [Climatic]

Section 1009.13.3 of the California Building Code, 2010 Edition, is hereby deleted and a new section 1009.13 is added to read in its entirety as follows:

“1009.13.3 Exit Door to Roof. In every building four or more stories in height all required stairways shall extend to the roof surface, unless the roof has a slope greater than four in twelve. The exit doors at the roof shall be locked at all times and shall not comply to Section 1008.1.9.3. Locking mechanisms shall have the capacity of being unlocked simultaneously without unlatching upon a signal from the central control station or the fire and sprinkler alarm system if a central control system is not required. Upon failure of electrical power, the locking mechanisms shall be retracted to the unlocked position.”

Section 81.2.13 Smoke Proof Enclosures [Climatic]

Sections 1022.9.3 and 1022.9.4 of the California Building Code, 2007 edition are hereby added to read in their entirety as follows:

“1022.9.3 Fire Department Access. When the fire department access as defined in Section 902.2.1 of the Uniform Fire Code is restricted, special approved fire protection systems shall be provided as required and approved by the Fire Chief.

1022.9.4 Building Owners Responsibility. The building engineer shall test all the equipment referred to in these requirements at least once every thirty (30) days and maintain a log attesting to the results. The log shall be available for inspection by the Building Official and the Fire Chief.”

Section 81.2.14 Roof Drainage Water. [Climatic]

Section 1503.4.4 of the California Building Code, 2010 Edition, is hereby added to read in its entirety, as follows:

“**1503.4.4 Over Public Property.** Unless otherwise approved by the Building Official, roof drainage water from a building shall be conducted from the roof by gutters to downspouts or roof drains by conduit underground to the street, or other approved drainage way.

Exception: Groups R, Division 3 and U Occupancies”

Section 81.2.15 Minimum Slope of Built-Up Roofs [Climatic]

Section 1507.10.1 the California Building Code, 2010 Edition, is hereby amended to read in its entirety as follows:

“**1507.10.1 Slope.** Built-up roofs shall have a design slope of a minimum of one-fourth unit vertical in 12 units horizontal (2-percent slope) for drainage.”

Section 81.2.16 Flexible Diaphragm [Geological]

Section 1613.6.1 of the 2010 California Building Code is amended to read as follows:

1613.6.1 Assumption of flexible diaphragm. Add the following text at the end of Section 12.3.1.1 of ASCE 7:

Diaphragms constructed of wood structural panels or untopped steel decking shall also be permitted to be idealized as flexible, provided all of the following conditions are met:

1. Toppings of concrete or similar materials are not placed over wood structural panel diaphragms except for nonstructural toppings no greater than 1 ½ inches (38 mm) thick.
2. Each line of vertical elements of the seismic-force-resisting system complies with the allowable story drift of Table 12.12-1.

3. Vertical elements of the seismic-force-resisting system are light-framed walls sheathed with wood structural panels rated for shear resistance or steel sheets.
4. Portions of wood structural panel diaphragms that cantilever beyond the vertical elements of the seismic-force-resisting system are designed in accordance with Section 4.2.5.2 of AF&PA SDPWS.

Section 81.2.17 Displacement

Section 1613.6.7 of the 2010 Edition of the California Building Code is amended to read as follows:

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

(Equation 16-44)

where:

C_d = Deflection amplification factor in Table 12.2-1 of ASCE 7.

δ_{\max} = Maximum displacement defined in Section 12.8.4.3 of ASCE 7.

Section 81.2.18 ASCE 7 Modifications

Section 1613.8 through 1613.11 is added to Chapter 16 of the 2010 Edition of the California Building Code to read as follows:

1613.8 ASCE 7, Table 12.8-2. Modify ASCE 7 Table 12.8-2 by adding the following:

Structure Type	C_t	x
Eccentrically braced steel frames and buckling-restrained braced frames	0.03 (0.0731) ^a	0.75

1613.9 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.

1613.10 ASCE 7, Section 12.8.7. Modify ASCE 7 Section 12.8.7 by amending Equation 12.8-16 as follows:

$$\theta = \frac{P_x \Delta l}{V_x h_s C_d} \quad (12.8-16)$$

1613.11 ASCE 7, Section 12.11.2.2.3. Modify ASCE 7, Section 12.12.4 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.

Section 81.2.19 Suspended Ceilings

Section 1613.13 is added to Chapter 16 of the 2010 Edition of the California Building Code to read as follows:

1613.12 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 subsection.

1613.12.1 Scope. This part contains special requirements for suspended ceilings and lighting systems. Provisions of Section 13.5.6 of ASCE 7 shall apply except as modified herein.

1613.12.2 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.

1613.12.3 Design and Installation Requirements.

1613.12.3.1 Bracing at Discontinuity. Positive bracing to the structure shall be provided at changes in the ceiling plane elevation or at discontinuities in the ceiling grid system.

1613.12.3.2 Support for Appendages. Cable trays, electrical conduits and piping shall be independently supported and independently braced from the structure.

1613.12.3.3 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, in accordance with Section 13.5.6.2.2 (e) of ASCE 7.

Sprinkler heads penetrating fire-resistance-rated floor/ceiling or roof/ceiling assemblies shall comply with Section 713 of this Code.

1613.12.3.4 Perimeter Members. A minimum wall angle size of at least a two-inch (51 mm) horizontal leg shall be used at perimeter walls and interior full height partitions. The first ceiling tile shall maintain 3/4 inch (19 mm) clear from the finish wall surface. An equivalent alternative detail that will provide sufficient movement due to anticipated lateral building displacement may be used in lieu of the long leg angle subject to the approval of the Building Official.

1613.12.4 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.

1613.12.4.1 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.

1613.12.4.2 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.

1613.12.4.3 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.

1613.12.4.4 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.

Section 81.2.20 Special Inspection for Concrete

Section 1704.4 of the 2010 Edition of the California Building Code is amended to read as follows:

1704.4 Concrete Construction. The special inspections and verifications for concrete construction shall be as required by this section and Table 1704.4.

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).
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 patios, driveways and sidewalks, on grade.

Section 81.2.21 Connection Grade Beams

Section 1704.8 and 1704.9 of the 2010 Edition of the California Building Code is amended to read as follows:

1704.8 Driven deep foundations and connection grade beams. Special inspections shall be performed during installation and testing of driven deep foundation elements as required by Table 1704.8. Special inspections shall be performed for connection grade beams in accordance with Section 1704.4 for structures assigned to Seismic Design

Category D, E or F. The approved geotechnical report, and the construction documents prepared by the registered design professionals, shall be used to determine compliance.

1704.9 Cast-in-place deep foundations and connection grade beams. Special inspections shall be performed during installation and testing of cast-in-place deep foundation elements as required by Table 1704.9. Special inspections shall be performed for connection grade beams in accordance with Section 1704.4 for structures assigned to Seismic Design Category D, E or F. The approved geotechnical report, and the construction documents prepared by the registered design professionals, shall be used to determine compliance.

Section 81.2.22 Special Inspections Statements

Section 1705.3 of the 2010 Edition of the California Building Code is amended to read as follows:

1705.3 Seismic resistance. The statement of special inspections shall include seismic requirements for cases covered in Sections 1705.3.1 through 1705.3.5.

Exception: Seismic requirements are permitted to be excluded from the statement of special inspections for structures designed and constructed in accordance with the following:

1. The structure consists of light-frame construction; the design spectral response acceleration at short periods, S_{DS} , as determined in Section 1613.5.4, does not exceed 0.5g; and the height of the structure does not exceed 35 feet (10 668 mm) above grade plane; or
2. The structure is constructed using a reinforced masonry structural system or reinforced concrete structural system; the design spectral response acceleration at short periods, S_{DS} , as determined in Section 1613.5.4, does not exceed 0.5g, and the height of the structure does not exceed 25 feet (7620 mm) above grade plane; or
3. Detached one- or two-family dwellings not exceeding two stories above grade plane, provided the structure is not assigned to Seismic Design Category D, E or F and does not have any of the following plan or vertical irregularities in accordance with Section 12.3.2 of ASCE 7:
 - 3.1 Torsional irregularity.
 - 3.2 Nonparallel systems.
 - 3.3 Stiffness irregularity—extreme soft story and soft story.

3.4 Discontinuity in capacity—weak story.

Section 81.2.23 Structural Observation

Section 1710.1 and 1710.2 of the 2010 Edition of the California Building Code is amended to read as follows:

1710.1 General. Where required by the provisions of Section 1710.2 or 1710.3, the owner shall employ 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.

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.

1710.2 Structural observations for seismic resistance. Structural observations shall be provided for those structures assigned to Seismic Design Category D, E or F, as determined in Section 1613, where one or more of the following conditions exist:

1. The structure is classified as Occupancy 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 classified as Occupancy Category I or II in accordance with Table 1604.5, and 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.

Section 81.2.24 Soils and Foundations. [Geological]

Section 1806.2 of the 2010 California Building Code is amended to read as follows:

“1806.2. Presumptive Load-bearing Values. The maximum allowable foundation pressure, lateral pressure or lateral sliding-resistance values for supporting soils near the surface shall not exceed the values specified in Table 1804.2 unless data to substantiate the use of a higher value are submitted and approved. Presumptive load-bearing values shall apply to materials with similar physical characteristics and dispositions. Mud, organic silt, organic clays, peat or uncertified fill shall not be assumed to have a presumptive loadbearing capacity unless data to substantiate the use of such a value are submitted.

Section 81.2.25 Wood Foundations

Section 1807.1.4 of the 2010 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.

Section 81.2.26 Prescriptive Design - Foundation Walls

Section 1807.1.6 of the 2010 Edition of the California Building Code is amended to read as follows:

1807.1.6 Prescriptive design of concrete and masonry foundation walls.

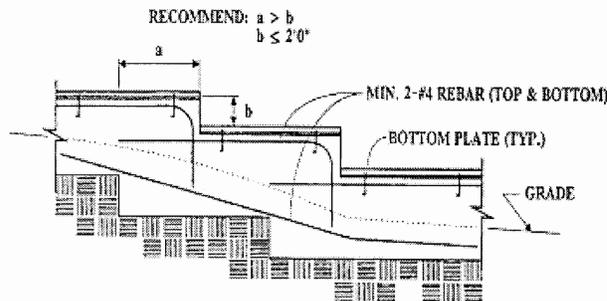
Concrete and masonry foundation walls that are laterally supported at the top and bottom shall be permitted to be designed and constructed in accordance with this section. Prescriptive design of foundation walls shall not be used for structures assigned to Seismic Design Category D, E or F

Section 81.2.27 Stepped Footings

Section 1809.3 and 1809.4 of the 2010 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 1/2-inch diameter (12.7 mm) deformed reinforcing bars. Two bars shall be placed at the top and bottom of the footings as shown in Figure 1809.3.



STEPPED FOUNDATIONS

**FIGURE 1809.3
STEPPED FOOTING**

“1809.4. Depth and width of footings. The minimum depth of footings below the undisturbed ground surface, compacted fill material or CSLM shall be 12 inches (305mm). Where applicable, the requirements of Section 1809.5 shall also be satisfied. The minimum width of footings shall be 12 inches (305mm).

Section 81.2.28 Prescriptive Footings – Light Frame Construction

Section 1809.7 and Table 1809.7 of the 2010 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

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. 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.

Section 81.2.29 Timber Footings

Section 1809.12 of the 2010 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.

Section 81.2.30 Expansive Soils

Section 1809.14 is added to the 2010 California Building Code to read as follows:

“1809.14. Expansive Soils. When expansive soils are present, the Building Official shall require that footings supporting light-frame construction shall, at a minimum, comply with the following provisions:

1. MINIMUM FOUNDATION REQUIREMENTS FOR BEARING WALLS LOCATED IN EXPANSIVE SOIL

Number of Stories	Thickness of Foundation (Inches)		Pier (inches)	Width of Footing (Inches)	Thickness of Footing (Inches)	Depth of Foundation Below Natural Grade Int./Ext. (Inches)
	Concrete	Unit Masonry				
1	6	6	16x16	12	8	18/24
2	8	8	-	15	8	18/24
3	10	10	-	18	10	18/24

2. MINIMUM FOOTINGS AND FOUNDATION WALL REQUIREMENTS

Footings and foundation walls when located on expansive soil shall be of concrete poured integrally and continuous under all exterior and interior bearing walls. Footings and foundation walls shall be reinforced continuously top and bottom. Footings and foundation walls for one-story buildings shall have a minimum of two (2) one-half (1/2) inch diameter steel bar. Footings and foundation walls for two story and three story buildings and over shall have a minimum of two (2) five-eighths (5/8) inch diameter steel bars. All access openings through foundation walls shall be provided with additional concrete and steel below access openings. Crawl holes

through interior foundation walls shall be not closer than ten (10) feet to any intersecting exterior wall. Footings below any such crawl hole shall be dropped to provide a reinforced concrete beam section with a depth of at least twelve (12) inches between reinforcing rods. Foundation walls supporting wood shall extend six (6) inches above the finish grade adjacent to the wall at all points.

3. MINIMUM SLAB FLOOR REQUIREMENTS

Concrete slab floors shall be a minimum of four (4) inches thick reinforced with one-half (1/2) inch diameter steel bars @ sixteen (16) inches on center in each direction. Concrete to be underlain by two (2) layers of two (2) inch sand fill with six (6) mils thick moisture barrier membrane between the two layers. Subgrade shall be saturated to 18" depth prior to placement of concrete.

Section 81.2.31 Timber Foundations

Section 1810.3.2.4 of the 2010 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 81.2.32 ACI 318 Modifications

Section 1908.1 is amended to read as shown below and Sections 1908.1.11 thru 1908.1.14 is added to Chapter 19 of the 2010 Edition of the California Building Code to read as follows:

1908.1 General. The text of ACI 318 shall be modified as indicated in Sections 1908.1.1 through 1908.1.14.

1908.1.11 ACI 318, Section 21.6.4.1. Modify ACI 318, Section 21.6.4.1, to read as follows:

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.

1908.1.12 ACI 318, Section 21.6.4. Modify ACI 318, Section 21.6.4, by adding Section 21.6.4.8 to read as follows:

21.6.4.8 – 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 may be assumed to be of opposite sign. For the determination of the design strength, ϕP_n , of the column, these moments may be assumed to result from the deformation of the frame in any one principal axis.

1908.1.13 ACI 318, Section 21.9.4. Modify ACI 318, Section 21.9.4, by adding Section 21.9.4.6 to read 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 strength of the structure for resisting earthquake-induced forces. Such walls shall conform to the requirements of ACI 318 Section 21.13.

1908.1.14 ACI 318, Section 21.11.6. Modify ACI 318, Section 21.11.6, by adding the following:

Collector and boundary elements in topping slabs placed over precast floor and roof elements shall not be less than 3 inches (76 mm) or $6 d_b$ thick, where d_b is the diameter of the largest reinforcement in the topping slab.

Section 81.2.33 Seismic Design Category Requirements

Section 1908.1.2, 1908.1.3 and 1908.1.8 of the 2010 Edition of the California Building Code is amended to read as follows:

1908.1.2 ACI 318, Section 21.1.1. Modify ACI 318, Sections 21.1.1.3 and 21.1.1.7 as follows:

21.1.1.3 – Structures assigned to Seismic Design Category A shall satisfy requirements of Chapters 1 to 19 and 22; Chapter 21 does not apply. Structures assigned to Seismic Design Category B, C, D, E or F also shall satisfy 21.1.1.4 through 21.1.1.8, as applicable. Except for structural elements of plain concrete complying with Section 1908.1.8 of the International Building Code, structural elements of plain concrete are prohibited in structures assigned to Seismic Design Category C, D, E or F.

21.1.1.7 – Structural systems designated as part of the seismic-force-resisting system shall be restricted to those permitted by ASCE 7. Except for Seismic Design Category A, for which Chapter 21 does not apply, the following provisions shall be satisfied for each structural system designated as part of the seismic-force-resisting system, regardless of the Seismic Design Category:

- (a) Ordinary moment frames shall satisfy 21.2.
- (b) Ordinary reinforced concrete structural walls and ordinary precast structural walls need not satisfy any provisions in Chapter 21.
- (c) Intermediate moment frames shall satisfy 21.3.
- (d) Intermediate precast structural walls shall satisfy 21.4.
- (e) Special moment frames shall satisfy 21.5 through 21.8.
- (f) Special structural walls shall satisfy 21.9.
- (g) Special structural walls constructed using precast concrete shall satisfy 21.10.

All special moment frames and special structural walls shall also satisfy 21.1.3 through 21.1.7. Concrete tilt-up wall panels classified as intermediate precast structural wall system shall satisfy 21.9 in addition to 21.4.2 and 21.4.3 for structures assigned to Seismic Design Category D, E or F.

1908.1.3 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 1908.1.4 of this Code.

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.

1908.1.8 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) Concrete used for fill with a minimum cement content of two (2) sacks of Portland cement per cubic yard.
- (b) Isolated footings of plain concrete supporting pedestals or columns are permitted, provided the projection of the footing beyond the face of the supported member does not exceed the footing thickness.
- (c) Plain concrete footings supporting walls are permitted provided the footings have at least two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. A minimum of one bar shall be provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.

Exception: In detached one- and two-family dwellings three stories or less in height and constructed with stud-bearing walls, plain concrete footings with at least two 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.

Section 81.2.34 Plain Concrete Walls, Footings and Pedestals

Section 1909.4 of the 2010 Edition of the California Building Code is amended to read as follows:

1909.4 Design. Structural plain concrete walls, footings and pedestals shall be designed for adequate strength in accordance with ACI 318, Section 22.4 through 22.8.

Exception: For Group R-3 occupancies and buildings or other occupancies less than two stories above grade plane of light-frame construction, the required edge thickness of ACI 318 is permitted to be reduced to 6 inches (152 mm), provided that the footing does not extend more than 4 inches (102 mm) on either side of the supported wall. This exception shall not apply to structural elements designed to resist seismic lateral forces for structures assigned to Seismic Design Category D, E or F.

Section 81.2.35 Consumables for Welding

Section 2204.1.1 is added to Chapter 22 of the 2010 Edition of the California Building Code to read as follows:

2204.1.1 Consumables for welding.

2204.1.1.1 Seismic Force Resisting System (SFRS) welds. All welds used in members and connections in the SFRS shall be made with filler metals meeting the requirements specified in AWS D1.8 Clause 6.3. AWS D1.8 Clauses 6.3.5, 6.3.6, 6.3.7 and 6.3.8 shall apply only to demand critical welds.

2204.1.1.2 Demand critical welds. Where welds are designated as demand critical, they shall be made with filler metals meeting the requirements specified in AWS D1.8 Clause 6.3.

Section 81.2.36 Modifications to AISC-341. [Geological]

Section 2205.4 is added to Chapter 22 of the 2010 Edition of the California Building Code to read as follows:

2205.4 AISC 341, Part I, Section 13.2 Members. Add Section 13.2f to read as follows:

13.2f. Member Types

The use of rectangular HSS are not permitted for bracing members, unless filled solid with cement grout having a minimum compressive strength of 3,000 psi (20.7 MPa) at 28 days. The effects of composite action in the filled composite brace shall be considered in the sectional properties of the system where it results in the more severe loading condition or detailing.

Section 81.2.37 Fastener Requirements

Section 2304.9.1 and Table 2304.9.1 of the 2010 Edition of the California Building Code are 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.

Add new footnote q to Table 2304.9.1.

- q. Staples shall not be used to resist or transfer seismic forces in structures assigned to Seismic Design Category D, E or F.

Section 81.2.38 Wood Retaining Walls

Section 2304.11.7 of the 2010 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.

Section 81.2.39 Nails and Connectors

Section 2305.4 and 2305.5 is added to Chapter 23 of the 2010 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.

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.

Section 81.2.40 Wood Diaphragms

Tables 2306.2.1(3) and 2306.2.1(4) are added to Chapter 23 of the 2010 Edition of the California Building Code and Section 2306.2.1 of the 2010 Edition of the California Building Code is amended to read as follows:

2306.2.1 Wood structural panel diaphragms. Wood structural panel diaphragms shall be designed and constructed in accordance with AF&PA SDPWS. Wood structural panel diaphragms are permitted to resist horizontal forces using the allowable shear capacities set forth in Table 2306.2.1(1) or 2306.2.1(2). For structures assigned to Seismic Design Category D, E or F, the allowable shear capacities shall be set forth in Table 2306.2.1(3) or 2306.2.1(4). The allowable shear capacities in Table 2306.2.1(1) or-2306.2.1(2) are permitted to be increased 40 percent for wind design.

Wood structural panel diaphragms fastened with staples shall not used to resist seismic forces in structures assigned to Seismic Design Category D, E or F.

Exception: Staples may be used for wood structural panel diaphragms when the allowable shear values are substantiated by cyclic testing and approved by the building official.

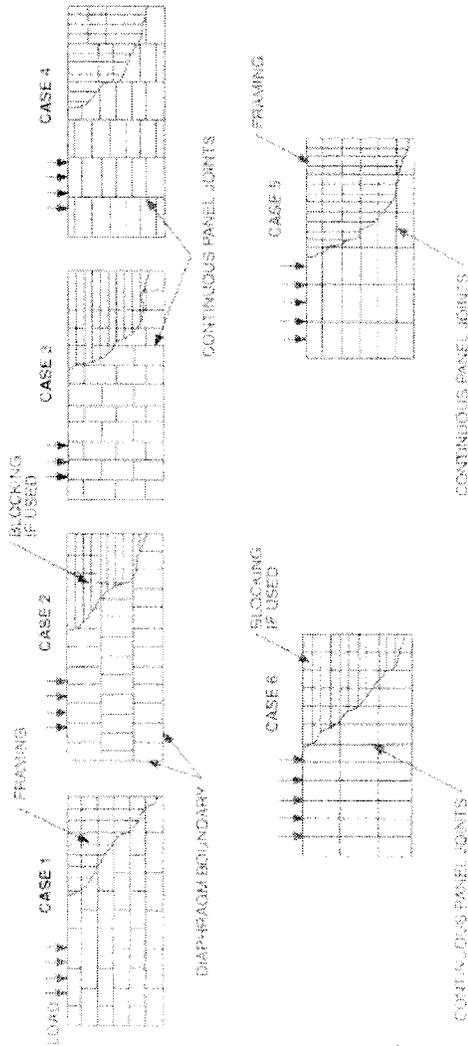
Wood structural panel diaphragms used to resist seismic forces in structures assigned to Seismic Design Category D, E or F shall be applied directly to the framing members.

Exception: Wood structural panel diaphragm is permitted to be fastened over solid lumber planking or laminated decking, provided the panel joints and lumber planking or laminated decking joints do not coincide.

TABLE 2306.2.1(3)
 ALLOWABLE SHEAR (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL DIAPHRAGMS WITH
 FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINE^a FOR SEISMIC LOADING^f
 FOR STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY D, E OR F

PANEL GRADE	COMMON NAIL SIZE	MINIMUM FASTENER PENETRATION IN FRAMING (inches)	MINIMUM NOMINAL PANEL THICKNESS (inch)	MINIMUM NOMINAL WIDTH OF FRAMING MEMBERS AT ADJOINING PANEL EDGES AND BOUNDARIES ^e (inches)	BLOCKED DIAPHRAGMS						UNBLOCKED DIAPHRAGMS				
					Fastener spacing (inches) at diaphragm boundaries (all cases) at continuous panel edges parallel to load (Cases 3,4), and at all panel edges (Cases 5, 6) ^b						Fastener spaced 6" max. at supported edges ^b				
					6	4	2 1/2 ^c	2 ^c	1.1.1.1 Fastener spacing (inches) at other panel edges (Cases 1,2,3 and 4) ^b				Case 1	All other configurations (Cases 2, 3, 4, 5 and 6)	
Structural I Grades	8d (2 1/2" x 0.131")	1 3/8	3/8	2	6	4	2 1/2 ^c	2 ^c	6	4	3	(No unblocked edges or continuous joints parallel to load)	240	180	
					300	400	600	675	530	600	675	265	200		
	10d ^d (3" x 0.148")	1 1/2	15/32	3	6	4	2 1/2 ^c	2 ^c	360	480	720	820	320	240	
					320	425	640	730	640	730	285	215			
	Sheathing, single floor and other grades covered in DOC PS1 and PS2	6d ^e (2" x 0.113")	1 1/4	3/8	2	6	4	2 1/2 ^c	2 ^c	185	250	375	420	165	125
						210	280	420	475	420	475	185	140		
8d (2 1/2" x 0.131")		1 3/8	7/16	3	6	4	2 1/2 ^c	2 ^c	240	320	480	545	215	160	
					270	360	540	610	540	610	240	180			
8d (2 1/2" x 0.131")		1 3/8	15/32	2	6	4	2 1/2 ^c	2 ^c	255	340	505	575	230	170	
					285	380	570	645	570	645	255	190			
10d ^d (3" x 0.148")	1 1/2	19/32	3	6	4	2 1/2 ^c	2 ^c	270	360	530	600	240	180		
				300	400	600	675	600	675	265	200				
10d ^d (3" x 0.148")	1 1/2	19/32	2	6	4	2 1/2 ^c	2 ^c	290	385	575	655	255	190		
				324	430	650	735	650	735	290	215				
10d ^d (3" x 0.148")	1 1/2	19/32	3	6	4	2 1/2 ^c	2 ^c	320	425	640	730	285	215		
				360	480	720	820	720	820	320	240				

TABLE 2306.2.1(3)—continued
ALLOWABLE SHEAR (POUNDS PER FOOT) FOR WOOD STRUCTURAL
PANEL DIAPHRAGMS WITH FRAMING OF DOUGLAS FIR-LARCH,
OR SOUTHERN PINE^a FOR SEISMIC LOADING^f
FOR STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY D, E OR F



- For S1, 1 inch = 25.4 mm, 1 pound per foot = 14.5939 N/m.
- For framing of other species: (1) Find specific gravity for species of lumber in AF&PA NDS. (2) For nails find shear value from table above for nail size for actual grade and multiply value by the following adjustment factor: Specific Gravity Adjustment Factor = $[1 - (0.5 \cdot SG)]$, where SG = Specific Gravity of the framing lumber. This adjustment factor shall not be greater than 1.
 - Space fasteners maximum 12 inches o.c. along intermediate framing members (6 inches o.c. where supports are spaced at 2 1/2 inches o.c. or less).
 - Framing at adjoining panel edges shall be 3 inches nominal or thicker, and nails at all panel edges shall be staggered where panel edge nailing is specified at 2 1/2 inches o.c. or less.
 - Framing at adjoining panel edges shall be 3 inches nominal or thicker, and nails at all panel edges shall be staggered where both of the following conditions are met: (1) 10d nails having penetration into framing of more than 1 1/2 inches and (2) panel edge nailing is specified at 3 inches o.c. or less.
 - The minimum nominal width of framing members not located at boundaries or adjoining panel edges shall be 2 inches.
 - For shear loads of normal or permanent load duration as defined by the AF&PA NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.

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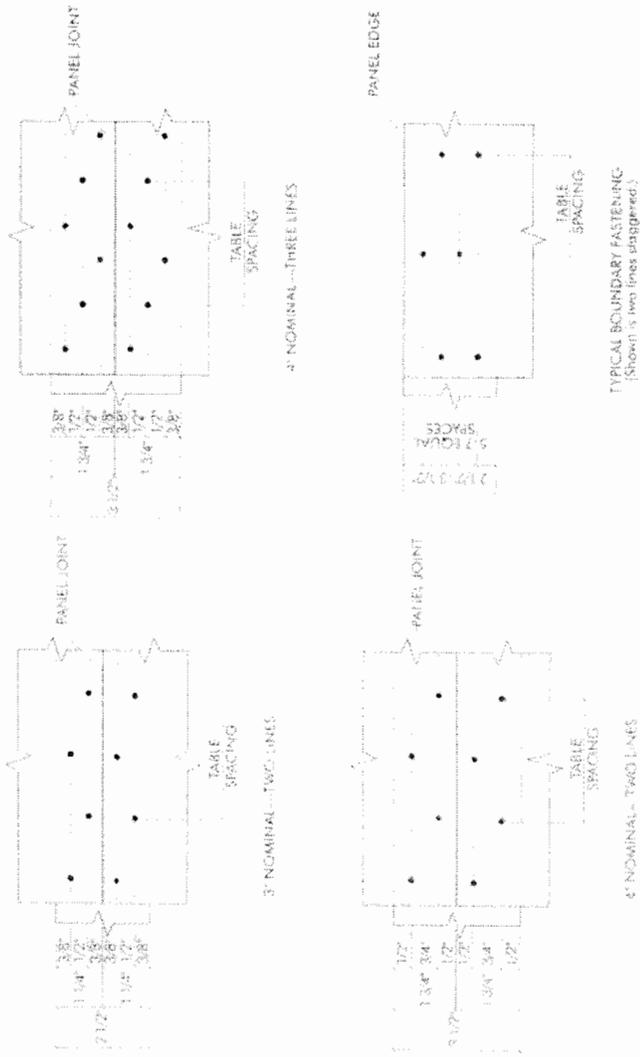
TABLE 2306.2.1(4)
 ALLOWABLE SHEAR (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL BLOCKED DIAPHRAGMS UTILIZING MULTIPLE ROWS OF FASTENERS
 (HIGH LOAD DIAPHRAGMS) WITH FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINE^{a,b,f,g} FOR SEISMIC LOADING^{b,f,g}
 FOR STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY D, E OR F

PANEL GRADE ^e	COMMON NAIL SIZE	MINIMUM FASTENER PENETRATION IN FRAMING (inches)	MINIMUM NOMINAL PANEL THICKNESS (inch)	MINIMUM NOMINAL WIDTH OF FRAMING MEMBERS AT ADJOINING PANEL EDGES AND BOUNDARIES ^d (inches)	LINES OF FASTENERS	BLOCKED DIAPHRAGMS								
						Cases 1 and 2 ^d		2 1/2						
						Fastener Spacing Per Line at Boundaries (inches)								
						Fastener Spacing Per Line at Other Panel Edges (inches)								
						6	4	4	4	3				
			15/32		2	605	815	875	875	1,150				
			19/32		2	700	915	1,005	1,005	1,290				
			23/32		3	875	1,220	1,285	1,285	1,395				
			19/32		2	670	880	965	965	1,255				
		1 1/2	19/32		2	780	990	1,110	1,110	1,440				
	10d common nails				3	965	1,320	1,405	1,405	1,790				
			23/32		2	730	955	1,050	1,050	1,365				
					2	855	1,070	1,210	1,210	1,565				
					3	1,050	1,430	1,525	1,525	1,800				
			15/32		2	525	725	765	765	1,010				
					2	605	815	875	875	1,105				
					3	765	1,085	1,130	1,130	1,195				
			19/32		2	650	860	935	935	1,225				
		1 1/2			2	755	965	1,080	1,080	1,370				
					3	935	1,290	1,365	1,365	1,485				
			23/32		2	710	935	1,020	1,020	1,335				
					2	825	1,050	1,175	1,175	1,445				
					3	1,020	1,400	1,480	1,480	1,565				

For S1: 1 inch = 25.4 mm, 1 pound per foot = 14.5939 N/m.

- a. For framing of other species: (1) Find specific gravity for species of lumber in AF&PA NDS. (2) For nails find shear value from table above for nail size for actual grade and multiply value by the following adjustment factor: Specific Gravity Adjustment Factor = $[1 - (0.5 - SG)]$, where SG = Specific Gravity of the framing lumber. This adjustment factor shall not be greater than 1.
- b. Fastening along intermediate framing members: Space fasteners a maximum of 12 inches on center, except 6 inches on center for spans greater than 32 inches.
- c. Panels conforming to PS1 or PS 2.
- d. This table gives shear values for Cases 1 and 2 as shown in Table 2306.2.1(3). The values shown are applicable to Cases 3, 4, 5 and 6 as shown in Table 2306.2.1(3), providing fasteners at all continuous panels edges are spaced in accordance with the boundary fastener spacing.
- e. The minimum nominal depth of framing members shall be 3 inches nominal. The minimum nominal width of framing members not located at boundaries or adjoining panel edges shall be 2 inches.
- f. High load diaphragms shall be subject to special inspection in accordance with Section 1704.6.1.
- g. For shear loads of normal or permanent load duration as defined by the AF&PA NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.

TABLE 2306.2.1(4)—continued
 ALLOWABLE SHEAR (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL BLOCKED DIAPHRAGMS UTILIZING MULTIPLE ROWS OF FASTENERS
 (HIGH LOAD DIAPHRAGMS) WITH FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINE^{a,b,c,g} FOR SEISMIC LOADING
 FOR STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY D, E OR F



NOTE: SPACE PANEL END AND EDGE JOINT 1/8-INCH. REDUCE SPACING BETWEEN LINES OF NAILS AS NECESSARY TO MAINTAIN MINIMUM 3/8-INCH FASTENER EDGE MARGINS, MINIMUM SPACING BETWEEN LINES IS 3/8-INCH

Section 81.2.41 Wood Shear Walls

Table 2306.3(2) is added to Chapter 23 of the 2010 Edition of the California Building Code and Section 2306.3 and Table 2306.3 of the 2010 Edition of the California Building Code are amended to read as follows:

2306.3 Wood structural panel shear walls. Wood structural panel shear walls shall be designed and constructed in accordance with AF&PA SDPWS. Wood structural panel shear walls are permitted to resist horizontal forces using the allowable shear capacities set forth in Table 2306.3(1). For structures assigned to Seismic Design Category D, E or F, the allowable shear capacities shall be set forth in Table 2306.3(2). The allowable shear capacities in Table 2306.3(1) are permitted to be increased 40 percent for wind design.

Wood structural panel shear walls used to resist seismic forces in structures assigned to Seismic Design Category D, E or F shall not be less than 4 feet by 8 feet (1219 mm by 2438 mm), except at boundaries and at changes in framing. 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.

The maximum allowable shear value for three-ply plywood resisting seismic forces in structures assigned to Seismic Design Category D, E or F is 200 pounds per foot (2.92 kN/m). Nails shall be placed not less than 1/2 inch (12.7 mm) in from the panel edges and not less than 3/8 inch (9.5mm) from the edge of the connecting members for shear greater than 350 pounds per foot (5.11kN/m). Nails shall be placed not less than 3/8 inch (9.5 mm) from panel edges and not less than 1/4 inch (6.4 mm) from the edge of the connecting members for shears of 350 pounds per foot (5.11kN/m) or less.

Wood structural panel shear walls fastened with staples shall not used to resist seismic forces in structures assigned to Seismic Design Category D, E or F.

Exception: Staples may be used for wood structural panel shear walls when the allowable shear values are substantiated by cyclic testing and approved by the building official.

Wood structural panel shear walls used to resist seismic forces in structures assigned to Seismic Design Category D, E or F shall be applied directly to the framing members.

TABLE 2306.3(1)
ALLOWABLE SHEAR (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL SHEAR WALLS WITH FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINE^a FOR WIND OR SEISMIC LOADING^{b, h, i, j, l, m, n}

TABLE 2306.3(2)
ALLOWABLE SHEAR (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL SHEAR WALLS
WITH
FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINE^a FOR SEISMIC LOADING^{b, h, j, k, l}
FOR STRUCTURES ASSIGNED TO SEISMIC DESIGN CATEGORY D, E OR F

PANEL GRADE	MINIMUM NOMINAL PANEL THICKNESS (inch)	MINIMUM FASTENER PENETRATION IN FRAMING (inches)	ALLOWABLE SHEAR VALUE FOR SEISMIC FORCES PANELS APPLIED DIRECTLY TO FRAMING				
			COMMON NAIL SIZE	Fastener spacing at panel edges (inches)			
				6	4	3	2 ^e
Structural I sheathing	3/8	1 3/8	8d (2½"x0.131" common)	200	200	200	200
	7/16	1 3/8	8d (2½"x0.131" common)	255	395	505	670
	15/32	1 3/8	8d (2½"x0.131" common)	280	430	550	730
		1 1/2	10d (3"x0.148" common)	340	510	665 ^f	870
Sheathing, plywood siding ^g except Group 5 Species	3/8 ^c	1 3/8	8d (2½"x0.113")	160	200	200	200

For SI: 1 inch = 25.4 mm, 1 foot = 25.4 mm, 1 pound per foot = 14.5939 N/m.

- For framing of other species: (1) Find specific gravity for species of lumber in AF&PA NDS. (2) For nails find shear value from table above for nail size for actual grade and multiply value by the following adjustment factor: Specific Gravity Adjustment Factor = $[1 - (0.5 - SG)]$, where SG = Specific Gravity of the framing lumber. This adjustment factor shall not be greater than 1.
- Panel edges backed with 2-inch nominal or thicker framing. Install panels either horizontally or vertically. Space fasteners maximum 6 inches on center along intermediate framing members for 3/8-inch and 7/16-inch panels installed on studs spaced 24 inches on center. For other conditions and panel thickness, space fasteners maximum 12 inches on center on intermediate supports.
- 3/8-inch panel thickness or siding with a span rating of 16 inches on center is the minimum recommended where applied direct to framing as exterior siding. For grooved panel siding, the nominal panel thickness is the thickness of the panel measured at the point of nailing.
- Allowable shear values are permitted to be increased to values shown for 15/32-inch sheathing with same nailing provided (a) studs are spaced a maximum of 16 inches on center, or (b) panels are applied with long dimension across studs.
- Framing at adjoining panel edges shall be 3 inches nominal or thicker, and nails shall be staggered where nails are spaced 2 inches on center or less.
- Framing at adjoining panel edges shall be 3 inches nominal or thicker, and nails shall be staggered where both of the following conditions are met: (1) 10d (3"x0.148") nails having penetration into framing of more than 1-1/2 inches and (2) nails are spaced 3 inches on center or less.
- Values apply to all-veneer plywood. Thickness at point of fastening on panel edges governs shear values.
- Where panels applied on both faces of a wall and nail spacing is less than 6 inches o.c. on either side, panel joints shall be offset to fall on different framing members. Or framing shall be 3-inch nominal or thicker at adjoining panel edges and nails at all panel edges shall be staggered.
- Where shear design values exceed 350 pounds per linear foot, 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.
- Galvanized nails shall be hot dipped or tumbled.
- For shear loads of normal or permanent load duration as defined by the AF&PA NDS, the values in the table above shall be multiplied by 0.63 or 0.56, respectively.

The maximum allowable shear value for three-ply plywood resisting seismic forces is 200 pounds per foot (2.92 kn/m).

Section 81.2.42 Shear Walls

Section 2306.7 of the 2010 Edition of the California Building Code are amended to read as follows:

2306.7 Shear walls sheathed with other materials. Shear walls sheathed with portland cement plaster, gypsum lath, gypsum sheathing or gypsum board shall be designed and constructed in accordance with AF&PA SDPWS. Shear walls sheathed with these materials are permitted to resist horizontal forces using the allowable shear capacities set forth in Table 2306.7. Shear walls sheathed with portland cement plaster, gypsum lath, gypsum sheathing or gypsum board shall not be used to resist seismic forces in structures assigned to Seismic Design Category E or F.

Shear walls sheathed with lath, plaster or gypsum board shall not be used below the top level in a multi-level building for structures assigned to Seismic Design Category D.

Section 81.2.43 Conventional Light Frame Construction. [Geological]

Section 2308.3.4 of Chapter 23 of the 2010 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 not assigned to Seismic Design Category D, E or F.

Section 81.2.44 Stone and Masonry Veneer

Section 2308.12.2 of Chapter 23 of the 2010 Edition of the California Building Code is amended to read as follows:

2308.12.2 Concrete or masonry. Concrete or masonry walls and stone or masonry veneer shall not extend above the basement.

Exception: Stone and masonry veneer is permitted to be used in the first story above grade plane in Seismic Design Category D, provided the following criteria are met:

1. Type of brace in accordance with Section 2308.9.3 shall be Method 3 and the allowable shear capacity in accordance with Table 2306.4.1 shall be a minimum of 350 plf (5108 N/m).
2. The bracing of the first story shall be located at each end and at least every 25 feet (7620 mm) o.c. but not less than 45 percent of the braced wall line.

3. Hold-down connectors shall be provided at the ends of braced walls for the first floor to foundation with an allowable design of 2,100 pounds (9341 N).
4. Cripple walls shall not be permitted.
5. Anchored masonry and stone wall veneer shall not exceed 5 inches (127 mm) in thickness, shall conform to the requirements of Chapter 14 and shall not extend more than 5 feet (1524 mm) above the first story finished floor.

Section 81.2.45 Braced Wall Lines

Section 2308.12.4 and Table 2308.12.4 of the 2010 Edition of the California Building Code are amended to read as follows:

2308.12.4 Braced wall line sheathing. Braced wall lines shall be braced by one of the types of sheathing prescribed by Table 2308.12.4 as shown in Figure 2308.9.3. The sum of lengths of braced wall panels at each braced wall line shall conform to Table 2308.12.4. Braced wall panels shall be distributed along the length of the braced wall line and start at not more than 8 feet (2438 mm) from each end of the braced wall line. Panel sheathing joints shall occur over studs or blocking. Sheathing shall be fastened to studs, top and bottom plates and at panel edges occurring over blocking. Wall framing to which sheathing used for bracing is applied shall be nominal 2 inch wide [actual 1¹/₂ inch (38 mm)] or larger members and spaced a maximum of 16 inches on center.

Exception: Braced wall panels required by Section 2308.12.4 may be eliminated when all of the following requirements are met:

1. One story detached Group U occupancies not more than 25 feet in depth or length.
2. The roof and three enclosing walls are solid sheathed with 15/32 inch nominal thickness wood structural panels with 8d common nails placed 3/8 inches from panel edges and spaced not more than 6 inches on center along all panel edges and 12 inches on center along intermediate framing members. Wall openings for doors or windows are permitted provided a minimum 4 foot wide wood structural braced panel with minimum height to length ratio of 2 to 1 is provided at each end of the wall line and that the wall line be sheathed for 50% of its length.

Wood structural panel sheathing shall be a minimum of 15/32 inch 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.

Braced wall panel construction types shall not be mixed within a braced wall line.

TABLE 2308.12.4
WALL BRACING IN SEISMIC DESIGN CATEGORIES D AND E
 (Minimum Length of Wall Bracing per each 25 Linear Feet of 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	10 feet 8 inches	14 feet 8 inches	18 feet 8 inches	25 feet 0 inches
	S-W ^d	5 feet 4 inches	8 feet 0 inches	9 feet 4 inches	12 feet 0 inches

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

- 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.
- G-P = gypsum board, portland cement plaster or gypsum sheathing boards; S-W = wood structural panels.
- 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;
- 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.

Section 81.2.46 Attachment of Sheathing

Section 2308.12.5 of the 2010 Edition of the California Building Code are 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.

Section 81.2.47 Life Safety Requirements for Existing Buildings. **[Administrative]**

Section 3401A.5, 3401A.6, 3401A.7, 3401A.8, 3401A.9 of Appendix Chapter 34A of the California Building Code, 2010 Edition, is hereby added to read in its entirety as follows:

"3401A4 Date for Compliance. Six (6) months after notification by the Torrance

Fire Department or Building & Safety Department that the structure is in violation of this chapter, every building falling within its scope shall be vacated until made to conform to the requirements of this section. The Building Official may grant necessary extensions of time when it can be shown that the specific time periods are not physically practical or pose an undue hardship. The granting of an extension of time for compliance shall be based upon the showing of good cause and subject to the filing of an acceptable systematic progressive plan of correction with the Building Official.”

3401A5 Exterior Exits. Exterior exit doors shall comply with the provisions of Chapter 10.

3401A6 Corridors. Corridors of Groups A, B, E, F, H, I, M and R, Division 1, and S Occupancies serving an occupancy load of 30 or more, shall have walls and ceilings of not less than one hour fire resistive construction as required by the code. Existing walls surfaced with wood lath and plaster in good condition or ½-inch gypsum wallboard or openings with fixed wired glass set in steel frames are permitted for corridor walls and ceilings and occupancy separations when approved. Where lath and plaster is found to be deteriorating in exit corridors, it shall be replaced or covered with 5/8 inch Type X gypsum wallboard throughout. Doors opening into such corridors shall be protected by 20-minute fire assemblies or solid wood doors not less than 1¾ inch thick door, a 1 3/8 -inch-thick solid bonded wood-core door or equivalent insulated steel door shall be permitted. Doors shall be self-closing or automatic closing by smoke detection. Transoms and openings other than doors from corridors to rooms shall comply with Section 1004.3.4.3.2 of the Uniform Building Code or shall be covered with a minimum of ¾ inch plywood or ½ -inch gypsum wallboard or equivalent material on the room side.

Exception: Existing corridor walls, ceilings and opening protection not in compliance with the above may be continued when such buildings are protected with an approved automatic sprinkler system throughout. Such sprinkler system may be supplied from the domestic water system if it is of adequate volume and pressure.

3401A7 General. Dwelling units and hotel or lodging house guest rooms that are used for sleeping purposes shall be provided with smoke detectors. Detectors shall be installed in accordance with the approved manufacturer's instructions.

3401A8 Separation of Occupancies. Occupancy separations shall be provided as specified in Section 302 of this code. When approved by the Building Official, existing wood lath and plaster in good condition or ½ inch gypsum wallboard may be acceptable where one-hour occupancy separations are required.

Upon inspection, where it is found that the original construction or due to deterioration, a condition exists where fire could spread unchecked vertically or horizontally, provide a one-hour fire separation or repair the penetration to the satisfaction of the Fire Department and the Building and Safety Department.”

3401A9 Compliance Data. After notification by the Torrance Fire Department or Building and Safety Department, the owner shall, subject to the following time limits, take necessary actions to comply with the provisions of this chapter.

Plans and specifications for the necessary alterations shall be filed with the Building Official within 18 months after the date of owner notification. Work on the required alterations to the building shall commence within 30 months of the date of owner notification and such work shall be completed within five years from the date of owner notification.

The Building Official may grant necessary extensions of time when it can be shown that the specified time periods are not physically practical or pose an undue hardship. The granting of an extension of time for compliance shall be based upon the showing of good cause and subject to the filing of an acceptable systematic progressive plan of correction with the Building Official."

Section 81.2.48 Excavation and Grading [Geological]

A new Section J101.3 of Appendix J of the California Building Code, 2010 Edition, is added to read as follows:

Section J101.3 Hazards.

J101.3.1 General. Excavations, embankments or fills for buildings or structures shall be so constructed or protected that they do not endanger life or property. No fill or other surcharge loads shall be placed adjacent to any building, slope or structure unless such building, slope or structure is capable of withstanding the additional loads caused by the fill or surcharge.

J101.3.2 Excavation, Grading, Geologic and Hillside Hazard. Whenever the Building Official determines that any existing excavation, embankment, fill, hillside or slope area has become or constitutes a hazard to safety or public welfare, or endangers property, or adversely affects the safety, use or stability of a public way or drainage course, the Building Official may declare these areas hazard areas. All such hazard areas are hereby declared a public nuisance and shall be rendered safe by repair, removal, reconstruction, or proper erosion planting in accordance with procedures specified in this chapter, or by any other procedures approved by the Building Official. The owner of the property upon which the excavation or fill is located, or other person or agent in control of said property, upon receipt of notice in writing from the Building Official, shall within the period specified therein repair, remove, reconstruct, or plant so as to be in conformance with the requirements of this code.

J101.3.3 Geological, Seismological or Flood Hazard. If, in the opinion of the Building Official, the land area for which grading or construction is proposed is subject to geological, seismological, or flood hazard to the extent that no reasonable amount of corrective work can eliminate or sufficiently reduce the hazard to human life or property, the grading permit and building permits for habitable structures shall be denied.

J101.3.4 Safety Precautions. If, at any stage of the work on an excavation, slope, embankment or fill, the Building Official believes that the nature of the formation is such that further work as authorized by an existing permit is likely to endanger any property or public way, the Building Official may require, as a condition of allowing the work to be done, that such reasonable safety precautions be taken as the Building Official considers advisable to avoid such likelihood of danger. Safety precautions may include, but shall not be limited to, specifying a flatter exposed slope, construction of additional drainage facilities, berm terracing compaction, or cribbing.”

Section 81.2.49 Definitions. [Geological]

Section J102 of Appendix J of the California Building Code, 2010 Edition, is hereby deleted in its entirety and a new Section J102 added to read in its entirety as follows:

“**Section J102 Definitions.** For the purposes of this chapter, the definitions listed hereunder shall be construed as specified in this section.

APPROVAL shall mean a written engineering or geological opinion concerning the progress and completion of the work, and the proposed or completed work conforms to this Division of the code in the opinion of the Building Official.

ASPHALTIC CONCRETE is a mixture of mineral aggregate and liquid asphalt mixed at a central mixing plant.

AS GRADED is the extent of surface conditions on completion of grading.

BEDROCK is in-place solid rock.

BENCH is a relatively level step excavated into earth material on which fill is to be placed.

BENCHMARK shall mean a point of elevation accepted by the City of Torrance based on the latest adjusted datum, as a point of reference for survey elevations.

BORROW is earth material acquired from an off-site location for use in grading on a site.

CIVIL ENGINEER shall mean a professional engineer registered in the State of California to practice in the field of civil engineering works.

COMPACTION is the densification of a fill by mechanical means.

CRUSHED AGGREGATE is crushed rock and rock dust. This does not include decomposed granite.

DAYLIGHT LINES are boundary lines of either the cut or fill where they meet the natural ground and the exposed surface.

DOWN DRAIN is a device for collecting water from a swale or ditch located on or above a slope, and safely delivering it to an approved drainage facility.

EARTH MATERIAL is any rock crushed aggregate, natural soil or fill and/or any combination thereof.

EMBANKMENT is built up soil used to protect, screen or support structures or designated areas.

ENGINEERING GEOLOGIST shall mean a geologist experienced and knowledgeable in engineering geology and registered in the State of California as an Engineering Geologist.

ENGINEERING GEOLOGY shall mean the application of geologic and seismic knowledge and principles in the investigation and evaluation of naturally occurring rock and soil for use in the design of civil works.

EROSION is the wearing away of the ground surface as a result of the movement of wind, water, and/or ice.

EXCAVATION is the mechanical removal of earth material by artificial means, also referred to as cut.

EXISTING GRADE is the grade prior to grading and/or demolition of structures.

FILL is a deposit of earth material placed by artificial means.

FINISH GRADE is the grade of the site at the conclusion of all grading efforts.

GEOTECHNICAL ENGINEER See Soils Engineer.

GRADE shall mean the vertical location of the ground surface.

GRADING is any excavating or filling or combination thereof.

HILLSIDE AREAS shall mean any land designated as being located within the Hillside Overlay District per Section 91.41.1.

HILLSIDE LANDSCAPING shall mean the application of landscaping knowledge and principles in the investigation and evaluation of planting over natural and placed soils in hillside areas for the purpose of slope protection.

KEY is a designed compacted fill placed in a trench excavated in earth material beneath the toe of a proposed fill slope.

LANDSCAPE ARCHITECT shall mean a landscape architect licensed by the State of California to practice in the field of landscape architecture and acceptable to the Building Official as an expert in hillside planting design.

NONCOMPLYING FILL is fill, which was placed without the supervision and approval of a geotechnical engineer, or otherwise not in compliance with Section 81.2.34.

PAVEMENT is asphaltic concrete or Portland Cement Concrete placed upon a prepared base.

PORTLAND CEMENT CONCRETE is a mixture of mineral aggregate and cement mixed at a central mixing plant.

PROFESSIONAL INSPECTION is the inspection required by this code to be performed by the civil engineer, geotechnical engineer or engineering geologist. Such inspections include that performed by persons supervised by such engineers or geologists and shall be sufficient to form an opinion relating to the conduct of the work.

RAINY SEASON is the period of wet weather starting October 01 and ending April 15.

ROUGH GRADE is the stage at which the grade approximately conforms to the approved plan.

SEISMIC FAULT is an active earth plane associated with earthquakes.

SEISMOLOGY is the science of the study of earthquakes and their effect on site development.

SITE is any lot or parcel of land or contiguous combination thereof, under the same ownership, where grading is performed or permitted.

SLOPE is an inclined ground surface, the inclination of which is expressed as a ratio of horizontal distance to vertical distance. Any inclined surface with a ratio greater than ten (10) horizontal to one (1) vertical, or ten (10) percent, shall be considered a slope.

SOIL is naturally occurring surficial deposits overlying bedrock.

SOIL ENGINEER (Geotechnical Engineer) shall mean a civil engineer experienced and knowledgeable in the practice of soil engineering and acceptable to the Building Official as an expert in soil engineering.

SOIL ENGINEERING (Geotechnical Engineering) shall mean the application of the principles of soil mechanics in the investigation, evaluation, and design of Civil works involving the use of earth materials and the inspection and testing of the construction thereof.

STOCKPILE is any amount of material stored upon a lot not in compliance with the grading provisions of this chapter.

TERRACE is a relatively level step constructed in the face of a graded slope surface for drainage and maintenance purposes.”

Section 81.2.50 Permits Required. [Geological]

Section J103 of Appendix J of the California Building Code, 2010 Edition, is hereby deleted in its entirety and a new Section J103 added to read in its entirety as follows:

Section J103 Permits Required.

“**J103.1 Permits Required.** No person shall do any grading or paving without first having obtained a grading permit from the Building Official. A grading permit does not include the construction of retaining walls or other structures.

J103.2 Exempt. A grading permit shall not required for the following:

1. Grading in an isolated, self-contained area if there is no danger apparent to private or public property and will not alter or increase the flow of the drainage of the area when approved by the Building Official.
2. An excavation below finished grade for basements and footings of a building, retaining wall or other structure authorized by a valid building permit. This shall not exempt any fill made with the material from such excavation nor exempt any excavation having an unsupported height greater than five (5) feet after the completion of such structure.
3. Cemetery graves.
4. Refuse disposal sites controlled by other regulations.
5. Excavations for wells, or trenches for utilities.
6. Mining, quarrying, excavating, processing, stock piling of rock, sand, gravel, aggregate, or clay where established and provided for by law, provided such operations do not affect the lateral support or increase the stresses in or pressure upon any adjacent or contiguous property.
7. Exploratory excavations under the direction of geotechnical engineer or engineering geologist.
8. Paving of basements or roof areas authorized by a valid building permit.
9. Resurfacing of existing paved areas provided existing paving is not removed and the drainage pattern is not modified.

10. Repair of paved areas of less than one thousand (1,000) square feet.

Exemption from the permit requirements of this appendix shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this chapter or any other laws or ordinances of this jurisdiction.”

Section 81.2.51 Grading Permit Requirements. [Geological]

Section J104 of Appendix J of the California Building Code, 2010 Edition, is hereby deleted in its entirety and a new Section J104 added to read in its entirety, as follows:

“J104 Permit Application and Submittals.

J104.1 Submittal requirements. In addition to the provisions of Section 105.3 of the California Building 2010 Edition, are applicable to grading and paving and, in addition, the application shall state the estimated quantities of work involved including the amount of recompaction of fill material.

J104.2 General Grading Requirements. In granting a grading permit, the Building Official shall impose the following restrictions or conditions thereon, in addition to those otherwise provided herein. Such restrictions or conditions shall include but not be limited to:

1. Whenever any excavation, fill, or paving requires entry onto adjacent property for any reason, the permit applicant shall obtain the written consent of the adjacent property owner or his authorized representative or agent, and shall file a copy of said consent with the Building Official, before a permit for such grading or paving work may be issued. In the event on adjacent properties, contours are permanently changed, structures or drainage devices are added or modified, and/or the work done requires a grading permit under Section J103, a separate permit shall be required for each of such affected adjoining properties in addition to the consent letter. The consent letter will not be required if the adjoining owner takes out such grading permit.
2. No person shall conduct any grading, excavation, filling or paving, including the export or import of earth material between the hours of 8:00 p.m. and 7:00 a.m. of any day, except in emergencies as determined by the Building Official.
3. No person shall conduct any grading, excavation, or filling in excess of two hundred (200) cubic yards or any paving operations in excess of five thousand (5,000) square feet during the period between October 1st and April 15 unless a winter grading or paving plan and specifications and other plans or specifications, as required by the Building Official are filed with the Building and Safety Division and approved by the Building Official. Whenever it appears that any grading or paving project previously commenced pursuant to a permit issued by the Building and Safety Division will not be completed prior

to the date of October 1st, the Building Official may require that the permit applicant secure plans for winter protection and erosion control to protect any property adjacent to such property.

4. Paved streets, sidewalks and other improvements shall be maintained in a neat and clean condition free of loose soil, construction debris and trash. Street sweeping or other equally effective means shall be used on a regular basis to prevent storm flows from carrying sediment and debris outside the project boundaries. Watering shall not be used to clean streets.
5. The civil engineer or other qualified individual who prepared the grading plan and designed the erosion control devices shall be responsible for inspection and modification of the devices, as necessary, during the rainy season. The Building Official shall approve significant modifications to erosion control.

In addition, the Building Official in granting a grading or paving permit, may impose such conditions thereon in addition to those otherwise provided herein, as are reasonably necessary to prevent the proposed operations from being conducted in such a manner as to constitute or create a hazard to life or property. Such conditions may include, but shall not be limited to:

1. The designation of routes along which earth, sand, gravel, asphaltic concrete, or similar materials shall be transported where grading permit is for more than five hundred (500) cubic yards, or paving permits is for more than ten thousand (10,000) square feet.
2. Restrictions as to size, type, and number of pieces of equipment to be used, including trucks, where grading permit is for more than five hundred (500) cubic yards or paving permit is for more than ten thousand (10,000) square feet.
3. A provision that the applicant carry a policy of insurance insuring the City, its agents and employees, and the public against any loss or damage to persons or property resulting from the work to be performed under said permit in an amount not to exceed one million dollars (\$1,000,000.) or double the amount of the bond required therefore, whichever sum is greater, in a form approved by the Building Official.
4. Requirements for fencing or temporary protection for excavations or fills which would otherwise be hazardous.
5. A requirement for dust control during the course of grading or stockpile operation by watering or other approved method approved by the Building Official.
6. A requirement to provide a stabilized site access, using temporary asphalt concrete paving of two (2) inch thickness or more, or approved compacted base material, to allow for the removal of debris from vehicles leaving the

development site, and prevent the tracking of debris into the public right of way.

J104.3 Plans and Specifications. Each application for a grading or paving permit shall be accompanied by two (2) sets of plans and specifications and, when required, supporting data consisting of, but not limited to, a geotechnical report, engineering geology report, drainage report, and hillside landscape report. The plan specifications shall be prepared and signed by a civil engineer when required by the Building Official. Plans shall be drawn to scale upon substantial paper or cloth and shall be of sufficient clarity to indicate the nature and extent of the work proposed, and shows in detail that they will conform to the provisions of this code and all relevant laws, ordinance, rules and regulations. The first sheet of each set of plans shall give the location of the work, legal description, and where prepared. The plans should include, but not be limited to, the following information:

1. General vicinity sketch of the proposed site and known seismic faults.
2. Property limits and accurate contours of existing ground and details of terrain and area drainage of the existing ground on the property where the work is to be performed, contributory drainage areas, and on the property adjacent thereto for a distance of approximately fifteen (15) feet.
3. Detailed plans of pavement, planters, and planted areas, all surface and subsurface drainage devices, walls, cribbing, dams, and other protective devices to be constructed with, or as a part of, the proposed work, together with a map showing the drainage area, and the estimated runoff of the area served by any drains.
4. Location of any buildings or structures on the property where the work is to be performed and the location of any building or structures on land of adjacent owners which are within fifteen (15) feet of the property or which may be affected by the proposed grading operation.
5. The location of top and toe of all cuts and fills, the location of all "daylight" lines.
6. Planting and irrigation plans of all hillside or slope areas when required by the Building Official.
7. The quantity of excavation and fill involved, including the recompaction of existing uncompacted fill.
8. Limiting dimensions elevations or finish contours to be achieved by the grading and proposed drainage channels and related construction.

9. The dates of the geotechnical engineering and engineering geology reports together with the names, addresses and phone numbers of the firms or individuals who prepare the reports.
10. Existing and proposed improvements within the public right of way.

Specifications shall contain information covering construction and material requirements.

J104.4 Grading and Paving Designation. All grading in excess of five thousand (5,000) cubic yards or paving in excess of fifty thousand (50,000) square feet shall be performed in accordance with the approved grading or paving plan prepared by a civil engineer, and shall be designated as "engineered grading or paving." Grading involving less than 5,000 cubic yards or paving of less than fifty thousand (50,000) square feet shall be designated "regular grading or paving" unless the permittee with the approval of the Building Official chooses to have the grading performed as "engineered grading or paving." The Building Official may designate grading of less than five thousand (5,000) cubic yards or paving of less than fifty thousand (50,000) square feet as "engineered grading or paving" if the grading takes place in the Hillside Area or the nature of the work requires special design consideration.

J104.5 Engineered Grading and Paving Requirements. For engineered grading or paving plans, the plans and specifications shall be prepared and signed by an individual licensed by the state to prepare such plans or specifications when required by the Building Official. It shall be the responsibility of the individual to incorporate all recommendations from the geotechnical engineering, engineering geology, seismological, drainage and landscape planting reports into the grading or paving plan. The individual shall also act as the coordinating agent in the event the need arises for liaison between the other professionals, the contractor, and the Building Official.

The landscape architect shall also be responsible for the preparation of landscape planting and irrigation plans and specifications. These plans and specifications shall be submitted to the Building Official for approval prior to the issuance of the grading permit.

J104.6 Geotechnical Report. The geotechnical report prepared by a registered design professional required by Section J104.2 shall include at least the following:

1. Data regarding the nature, distribution, and strength of existing soils;
2. Conclusions, and recommendations for grading and paving procedures;
3. Soil design criteria for any structures or embankments required to accomplish the proposed grading;
4. Where necessary, slope stability studies, and recommendations and conclusions regarding site geology; and
5. Effect of the development on adjacent properties.

Recommendations included in the report and approved by the Building Official shall be incorporated in the grading or paving plans and specifications.

J104.7 Engineering Geology Report. The engineering geology report prepared by a registered geologist required by Section J104.2 shall include at least the following:

1. An adequate description of the geology of the site, conclusions, and recommendations regarding the effect of geologic conditions on the proposed development;
2. Opinions and recommendations covering the adequacy of sites to be developed by the proposed grading or construction; and
3. Analysis of seismic activity and seismic fault zones and their influence of the proposed development.

Recommendations included in the report, and approved by the Building Official, shall be incorporated in the grading plans or specifications.

J104.8 Liquefaction Study. The Building Official may require a geotechnical investigation in accordance with Sections 1803.2 and 1803.6 when, during the course of an investigation, all of the following conditions are discovered, a study of the liquefaction potential of the site shall be provided, and the recommendations incorporated in the plans:

1. Shallow ground water, 50 feet (15 240 mm) or less.
2. Unconsolidated sandy alluvium.
3. Seismic Zones 3 and 4.

J104.9 Drainage Report. Developments in excess of one acre, and using a subsurface drainage system shall submit a drainage study prepared by a civil engineer. The drainage report shall use the Los Angeles County Department of Public Works Hydrology Handbook methodology. A design frequency of 50-years shall be used for all developments located within sumped areas or required to retain drainage on site. All other developments may use a design frequency of 25-years.

J104.10 Hillside Landscaping Report. The landscaping report required by J104.2 shall include a plant list and data regarding the nature and method for promotion of growth of ground cover plants and shrubs to protect the slopes against erosion, conclusions, and recommendations for planting procedures, and criteria for corrective measures when necessary; and opinions and recommendation covering adequacy of protection of sites to be developed by the proposed grading. This report shall be prepared by a licensed landscape architect and approved by the Building Official.

Recommendations included in the report and approved by the Building Official shall be incorporated in the grading plans or specifications.

J104.11 Issuance. The provisions of Sections 107.3, 107.4 and 107.5 of the California Building Code are applicable to grading permits. The Building Official may require that grading or paving operations and project designs be modified if delays occur which incur weather-generated problems not considered at the time the permit was issued. Grading and paving operations on a single site may be conducted under a single permit provided fees have been paid. The Building Official may require professional inspection and testing by the geotechnical engineer. When the Building Official has cause to believe that geologic factors may be involved, the grading will be required to conform to engineered grading.

J104.12 Stockpile Permit. The Building Official may issue a permit to stockpile soil on a lot upon submission by the owner of such a lot or his authorized agency, a scaled plan showing the lot dimensions, location in which the stockpile is to be placed, the approximate amount of soil to be stockpiled, height of stockpile and method of dust and erosion control. Soil so stockpiled must not be disturbed or leveled unless a regular grading permit has been obtained for the work. Stockpile permits shall be valid for no longer than 180 days unless a written extension request is received from the owner, or his authorized agency, and approved by the Building Official.”

J104.13 Bonds. [Administrative]

a) General. The Building Official may require bonds in such form and amounts as may be deemed necessary to assure that the work, if not completed in accordance with the approved plans and specifications, will be corrected to eliminate hazardous conditions or assure performance under conditions imposed by the pertinent governing body.

When required, bonds shall be filed with the Building Official for the benefit of the City prior to the issuance of the permit for grading. The bond shall be on a form approved by the Building Official, executed by the owner and a corporate surety sufficient to cover correction elimination of hazardous conditions or to assure completion of conditions imposed by the pertinent governing body.

b) Hillside. Bonds shall be required for excavation or fill of earth in a hillside area unless the Building Official determines that the proposed grading is neither actually or potentially hazardous.

c) Cash Bond. In lieu of a surety bond the applicant may file a cash bond or instrument of credit with the Building Official in an amount equal to that which would be required in the surety bond.

d) Conditions of the Bond. Every bond shall be conditioned such that the owner shall:

1. Comply with all applicable provisions of this Code and all other applicable laws.

2. Comply with all of the terms and conditions of the grading permit to the satisfaction of the Building Official.
3. Complete all of the work described by the permit, and the plans and specifications relating thereto, within the time limit specified in the permit. Upon application by the permittee, the Building Official, for sufficient cause, may extend the time specified in the permit, but no such extension shall release any surety on the bond.
4. Install temporary erosion control devices when required to do so by the provisions of this Chapter.

e) Term of the Bond. The term of each bond shall begin upon the date of filing with the City and shall remain in effect until the completion of the work to the satisfaction of the Building Official or until replaced by a new bond in the event of a change of ownership. In the event of a failure to complete the work and failure to comply with all of the conditions and terms of the permit, the Building Official may order the work to be completed as required by the permit and to the satisfaction of the Building Official.

f) Bond Amount. The amount of the bond shall be based upon the number of cubic yards of material in either excavation or fill, whichever is the greater amount, and in addition shall include the cost of all drainage or other protective devices as may be required by the civil engineer and approved by the Building Official. That portion of the bond valuation covering the costs of excavation or fill shall be computed as set forth in Table B-J-A, unless increased by the Building Official.”

TABLE B-J-A—BONDS

1 to 10,000 cubic yards Over 10,001 cubic yards	\$10.00 per cubic yard \$100,000 plus \$5.00 for each additional cubic yard in excess of 10,000
Minimum Grading Bond	\$10,000

Section 81.2.52 Fills. [Geological]

Section J107 of Appendix J of the California Building Code, 2010 Edition, is hereby deleted in its entirety and a new Section J107 added to read in its entirety as follows:

“J107 Fills.

J107.1 General. Unless otherwise recommended in the approved geotechnical engineering report, fills shall conform to the provisions of this section.

In the absence of an approved geotechnical engineering report, these provisions may be waived for minor fills not intended to support structures.

J107.2 Preparation of Ground. Fill slopes shall not be constructed on natural slopes steeper than two to one. The ground surface shall be prepared to receive fill by removing vegetation, noncomplying fill, topsoil and other unsuitable materials scarifying to provide a bond with the new fill and where slopes are steeper than five to one, and the height is greater than five (5) feet, by benching into sound bedrock or other competent material, as determined by the geotechnical engineer. The bench under the toe of a fill on a slope steeper than five to one shall be at least ten (10) feet wide. The area beyond the toe of fill shall be sloped for sheet overflow or a paved drain shall be provided. When fill is to be placed over a cut, the bench under the toe of the fill shall be at least ten (10) feet wide but the cut shall be made before placing the fill and acceptance by the geotechnical engineer or engineering geologist or both as a suitable foundation for fill. Unsuitable soil is soil which, in the opinion of the Building Official or the civil engineer or the geotechnical engineer or the geologist, is not competent to support other soil or fill, to support structures, or to satisfactorily perform the other functions for which the soil is intended.

J107.3 Fill Material. Detrimental amounts of organic material shall not be permitted in fills. Except as permitted by the Building Official, no rock or similar irreducible material with a maximum dimension greater than twelve (12) inches shall be buried or placed in fills.

Exception: The Building Official may permit placement of larger rock when the geotechnical engineer properly devises a method of placement, continuously inspects its placement, and approves the fill stability.

The following conditions shall also apply:

1. Prior to issuance of the Grading Permit, potential rock disposal areas shall be delineated on the grading plan.
2. Rock sizes greater than twelve (12) inches in maximum dimension shall be ten (10) feet or more below grade, measured vertically.
3. Rocks shall be placed so as to assure filling of all voids with fines.

J107.4 Compaction. All manufactured fills shall be placed on natural undisturbed material or approved compacted fill, and compacted to a minimum of 90 percent relative compaction as determined by ASTM D 1557. Every manufactured fill shall be tested for relative compaction by a soil testing agency approved by the Building Official. A compaction report including a Certificate of Compliance setting forth densities so determined shall be submitted to the Building Official for review before approval of any fill is given.

Exception:

1. The Building Official may approve uncompacted fill in self-contained areas where the fills are not to be used to support buildings or structures and no hazard will be created.
2. Compaction report is not required for gravel backfill behind retaining walls provided the following conditions are met:
 - (a) The retaining wall does not exceed 5 feet in height from the bottom of the footing to the top of the wall.
 - (b) The maximum distance between the retaining wall and the backcut shall not exceed 24 inches.
 - (c) The gravel backfill shall be mechanically compacted and covered with concrete pavement or be capped with a 24-inch thick soil blanket mechanically compacted to the Building Official's satisfaction.
3. The gravel backfill does not provide vertical or lateral support for any structures or adverse bedding planes.

J107.5 Slope. The slope of fill surfaces shall be no steeper than is safe for the intended use. Fill slopes shall be no steeper than two (2) horizontal to one (1) vertical.

J107.6 Grade. All lots shall have a minimum grade of one (1) percent unless waived by the Building Official. The lot shall be graded to drain to the adjacent street(s). If the natural grade of any lot slopes away from the adjacent street an average grade greater than two (2) percent, or if the grade of adjacent lots causes adherence to the provisions of this section to not be in the best engineering practices, then the Building Official may allow an alternate method of conducting the drainage to adjacent streets as provided in Section J109. All paved parking areas, except driveways, shall have a maximum grade of ten (10) percent unless waived by the Building Official.

J107.7 Subgrade. All areas over which paving is to be placed shall be prepared in accordance with Sections J107.2, J107.3 and J107.4. Before the placing of pavement or before the construction of any structures, the geotechnical engineer shall approve or certify as to the conformance of the fill.

J107.8 Pavement.

J107.8.1 Asphalt Concrete Payment. Asphalt Concrete Pavement shall be designed to be of sufficient thickness to safeguard against damage due to soil and load conditions. Pavement sections may be designed by a geotechnical engineer or civil engineer in compliance with the California R-Value Method and approved by the Building Official. However, asphalt concrete shall not be less than two (2) inches in thickness. Minimum asphalt concrete pavement designed shall conform to the following: two (2) inches of asphalt concrete on four (4) inches of untreated rock base on sandy soils, and two (2) inches of asphalt concrete on six (6) inches of

untreated rock base on expansive soils. Pavement shall have a minimum grade of one (1) percent unless waived by the Building Official.

J107.8.2 Portland Cement Concrete. Portland Cement Concrete paving shall consist of not less than three and one-half (3 ½) inches in thickness for sandy soils or 3 ½ inches in thickness over four (4) inches of select material base for expansive soils. Concrete shall have a minimum grade of 0.4 percent unless waived by the Building Official.

J107.8.3 Minimum Material Standards. Base material, asphaltic concrete, and Portland Cement Concrete shall be of a type approved by the Building Official. The Building Official may require base compaction to a minimum of ninety-five (95) percent of maximum density as determined by ASTM D 1557. Field density shall be determined in accordance with ASTM D 1556, ASTM D 2167, ASTM D 2937 or ASTM D 2922 and ASTM D 3017.”

Section 81.2.53 Drainage And Terracing. [Geological]

Section J109.5 and J109.6 are added to read in its entirety as follows:

“J109.5 Disposal. All drainage facilities shall be designed to carry waters to the nearest practicable drainage way approved by the Building Official and/or other appropriate jurisdiction as a safe place to deposit such waters. Erosion of ground in the area of discharge shall be prevented by installation of non-erosive downdrains or other devices. Concentrated drainage water from drainage devices shall not be permitted to flow over the sidewalks or parkways.

Building pads shall have drainage of one (1) percent towards approved drainage facilities.

Drainage devices shall service no more than one property unless said device is located within a public easement and maintained by the City of Torrance.

J109.6 Ponding. Ponding of water shall not be permitted to occur on pavement, concrete or in landscape areas.

Exception: Upon the approval of the Building Official, a maximum ponding depth of 6 (six) inches in parking or paved areas is permitted where it is determined, as recommended in an approved drainage report, that storm water must be retained on site to comply with the provisions of this Chapter.”

Section 81.2.54 Erosion Control. [Topographical]

Section J110 of Appendix J of the California Building Code, 2010 Edition, is hereby deleted in its entirety and a new Section J110 added to read in its entirety, as follows:

“J110 Erosion Control of Cut and Fill Slopes in Hillside Areas.

J110.1 Slopes. The faces of cut and fill slopes shall be prepared and maintained to control against erosion. This control may consist of effective planting. The protection for the slopes shall be installed as soon as practicable and prior to calling for final approval. The Building Official may require landscaping plans, plant lists, and sprinkler plans to be prepared and signed by a licensed landscape architect and approved by the Building Official prior to issuance of a grading permit. Slopes shall be planted with grass or ground cover plants and an adequate irrigation system installed.

J110.2 Other Devices. Where necessary, check dams, cribbing, riprap, or other devices or methods shall be employed to control erosion and provide safety.”

Section 81.2.55 Completion of Work. [Administrative]

Section J112 is added to read in its entirety, as follows:

“J112 Completion of Work.

J112.1 Final Reports. Upon completion of the rough grading work and at the final completion of the work, the following reports and drawings and supplements thereto shall be required unless waived by the Building Official:

1. If substantial changes, as determined by the Building Official, have taken place from the approved grading plan, an as-graded grading plan or paving plan prepared by the individual of record, including original ground surface elevations, as-graded ground surface elevations, lot drainage patterns and locations, and elevation of all surface and subsurface drainage facilities. In addition, the Building Official shall state that to the best of his knowledge the work was done in accordance with the final approved grading plan or paving plan.
2. A report prepared by the geotechnical engineer retained to provide such services in accordance with Section J104.2, including locations and elevations of field density tests, summaries of field and laboratory test, a statement that all subdrains were inspected prior to backfill, other substantiating data and comments on any changes made during grading and their effect on the recommendations made in the approved geotechnical engineering investigation report. The geotechnical engineer shall provide a professional opinion of the suitability of the fill material and their placement, and the ability of the natural materials to support the compacted fill without excessive settlement of the fill or potential damage to structures erected thereon; geotechnical engineers shall submit a statement that, to the best of their knowledge, the work within their area of responsibilities is in accordance with the approved geotechnical engineering report and applicable provisions of this chapter.
3. A report prepared by the engineering geologist retained to provide such services in accordance with Section J104.2, including a final description of the geology of the site and any new information disclosed during the grading and

the effect of same on recommendations incorporated in the approved grading plan. The report shall include the geologist's certification that inspections were performed on all cut and fill slopes prior to placement of fill material.

Engineering geologists shall submit a statement that, to the best of their knowledge, the work within their area of responsibility is in accordance with the approved engineering geologist's report and applicable provisions of this chapter.

4. The grading contractor shall submit in a form prescribed by the Building Official a statement of conformance to said as-built plan and the specifications.
5. A landscape planting report prepared by the landscape architect, including a final planting list and layout of the planting of the hillside area. The Building Official shall provide approved the adequacy of the planting for the intended use.

J112.2 Notification of Completion. The permittee or his agent shall notify the Building Official when the grading operation is ready for the final inspection. Final approval shall not be given until all work, including installation of all drainage facilities and their protective devices and all erosion control measures, have been completed in accordance with the final approved grading plan and the required reports have been submitted."

SECTION 81.2.56 PERMIT FEES; EXCAVATION, GRADING AND PAVING.

[Geological]

1. Grading Plan Checking Fee. For excavation and fill on the same site, the fee shall be based on the volume of the excavation or fill, whichever is greater. Before accepting a set of plans and specifications for checking, the Building Official shall collect a plan checking fee. Separate permits and fees shall apply to retaining walls or major drainage structures as indicated elsewhere in this Code. There shall be no separate charge for standard terrace drains and similar facilities. The amount of the plan checking fee for grading plans shall be set by resolution of the City Council from time to time.
2. Grading Permit Fees. A fee for each grading permit shall be paid to the Building Official as set forth in a resolution of the City Council from time to time.
3. Stockpile Permit Fee. The permit fee for stockpiling shall be set forth in a resolution of the City Council from time to time.
4. Paving Plan Checking Fee. For paving, the fee shall be based on the square footage of the pavement placed. Before accepting a set of plans and specifications for checking, the Building Official shall collect a plan checking fee. The amount of the plan checking fee for paving plans shall be set forth in a resolution of the City Council from time to time.

5. Paving Permit Fee. A fee for each paving permit shall be paid to the Building Official as set forth in a resolution of the City Council from time to time."

SECTION 3

That Article 1 of Chapter 2 of Division 8, of the Torrance Municipal Code is hereby repealed and a new Article 1 of Chapter 2 of Division 8 is added to read in its entirety as follows:

"ARTICLE 1 – 2010 CALIFORNIA ELECTRICAL CODE

Section 82.1.1 Adoption of 2010 California Electrical Code.

"Those certain documents in book form entitled California Electrical Code, 2010 Edition, published by The National Fire Protection Association and The California Building Standards Commission, not less than one (1) copy of which has been and is now filed in the office of the City Clerk of the City of Torrance, save and except such portions as are hereinafter deleted, modified or amended by this ordinance, are hereby adopted by the City Council of the City of Torrance as the Electrical Code of the City of Torrance."

SECTION 4

That Article 2 of Chapter 2 of Division 8 of the Torrance Municipal Code are repealed in their entirety, and a new Article 2 of Chapter 2 of Division 8 is added to read in its entirety as follows:

"ARTICLE 2 AMENDMENTS TO THE 2010 CALIFORNIA ELECTRICAL CODE AND ADMINISTRATIVE CODE

Section 82.2.1 Annex H Administration and Enforcement. [Administrative]

Articles 80.1 thru 80.13 and 80.17 thru 80.25 of Annex H Administration and Enforcement, are hereby adopted in their entirety.

Article 80.18, Permits Required, is added to read in its entirety as follows:

Except as specified in Article 80.19 (C)(1)(2), no electrical system regulated by this code shall be installed, altered, repaired, replaced or remodeled unless a separate electrical permit for each building, structure system or equipment has first been obtained from the Building Official.

Section 82.2.2 Used Materials

Article 90.10 of the California Electrical Code, 2010 Edition, is hereby added to read in its entirety as follows:

"90.10 Used Material. Previously used materials shall not be reused in any work without the written approval obtained in advance from the Building Official."

Section 82.2.3 Aluminum Conductors. [Geological]

Article 90.11 of the California Electrical Code, 2010 Edition, is hereby added to read in its entirety as follows:

Article 90.11 Aluminum Conductors shall not be allowed.

Section 82.2.4 Uses not Permitted. [Geological]

Article 334.12(A) of the California Electrical Code, 2010 Edition, is amended to read in its entirety as follows:

334.12(A) Subsections 11. and 12. are hereby added to read in their entirety:

"334.12 Uses not Permitted. TYPES NM, NMC, AND NMS. Types NM, NMC, and N cables shall not be used in the following:

11. In any residential structure exceeding two floors above grade or in any nonresidential structure.
12. For the Purpose of this article, the first floor of a building shall be that floor that has 50 percent or more of the exterior wall surface area level with or above finished grade. One additional level that is the first level and not designed for human habitation and used only for vehicle parking, storage, or similar use shall be permitted."

SECTION 5

That Article 1 of Chapter 3 of Division 8 of the Torrance Municipal Code is hereby repealed in its entirety and a new Article 1 of Chapter 3 of Division 8 is added to read in its entirety as follows:

"ARTICLE 1 CALIFORNIA PLUMBING CODE**Section 83.1.1 Adoption of California Plumbing Code.**

That certain documents in book form entitled California Plumbing Code, 2010 Edition, published by the International Association of Plumbing and Mechanical Officials and the California Building Standards Commission, with appendices A, B, I and K of which not less than one copy has been and is now filed in the office of the City Clerk of the City of Torrance save and except those portions which are herein amended, deleted or modified by this chapter is hereby adopted by the City Council as the Plumbing Code of the City of Torrance."

SECTION 6

Sections 83.2.1 through 83.2.5 and sections 83.2.7 through 83.2.8 of the Torrance Municipal Code are hereby repealed, and new Sections 83.2.1 through 83.2.5 and sections 83.2.7 and 83.2.8 are hereby added to read in their entirety as follows:

"Section 83.2.1 Fees. [Administrative]

Schedule of fees of Table 1-1 of the California Plumbing Code, 2010 Edition, is deleted in its entirety.

Section 83.2.2 Minimum Number of Required Fixtures. [Administrative]

Section 412.1 of the California Plumbing Code, 2010 Edition, is hereby amended to read in its entirety as follows:

412.1 Fixture Count. Plumbing fixtures shall be provided for the type of building occupancy and in the minimum number shown in Table 4-1.

Exception: Where circumstances dictate that a different ratio is needed, the adjustment shall be approved by the Building Official."

Section 83.2.3 Drainage System Materials. [Climatic]

Subsection 701.1.2.3 of the California Plumbing Code, 2010 Edition, is hereby added to read in its entirety as follows:

701.1.2.3 Materials ABS and PVC DWV piping installations above ground shall be limited to residential construction, not more than two (2) stories in height.

Section 83.2.4 Building Sewer Materials. [Climatic]

Section 715.1 of the California Plumbing Code, 2010 Edition, is hereby amended to read in its entirety as follows:

“715.1 Building Sewer Materials. The building sewer, beginning two (2) feet from any building or structure shall be of cast iron, vitrified clay, asbestos cement sewer pipe, schedule 40 ABS, schedule 40 PVC pipe, or PVC SDR35 pipe or as approved by administrative authority.”

Section 83.2.5 Vents. [Climatic]

Subsection 903.1.5 of the California Plumbing Code, 2010 Edition, is hereby added to read in its entirety as follows:

“ 903.1.5 Materials. ABS or PVC installations are limited to residential construction, not more than two (2) stories in height.”

Subsection 908.2 of the California Plumbing Code, 2010 Edition, is hereby amended to read in its entirety as follows:

908.2 Horizontal Wet Venting for Bathroom Groups. Bathroom Horizontal Wet Venting is not permitted.

Section 83.2.7 Rainwater Systems. [Climatic]

Subsection 1101.3.2 of the California Plumbing Code, 2010 Edition, is hereby added to read in its entirety as follows:

1101.3.2 MATERIALS. ABS and PVC DWV piping installations above ground shall be limited to residential construction, not more than two (2) stories in height.”

Subsection 101.11.1 of the California Plumbing Code, 2010 Edition, is hereby amended to read in its entirety as follows:

1101.11.1 Primary Roof Drainage. Roof areas of a building shall be drained by roof drains or gutters. The location and sizing of drains and gutters shall be coordinated with the structural design and pitch of the roof. Roof drains, gutters, vertical conductors or leaders, and horizontal storm drains for primary drainage shall be sized based on rainfall of four (4”) inches per hour.

Section 83.2.8 Swimming Pools. [Administrative]

Appendix M of the California Plumbing Code, 2010 Edition, is hereby added to read in its entirety as follows:

“Appendix M Swimming Pools.

M1 Swimming pool waste water shall be disposed of as hereinafter set forth in this Section and the type of disposal proposed shall be approved by the Administrative Authority prior to the commencement of any work. A means of disposal of the total contents of the pool (periodic emptying) without surface run-off shall be established to the satisfaction of the Administrative Authority.

M2 Except as provided in M3, when a public sewer or storm drain of adequate capacity is available for use, swimming pool waste water shall be discharged thereinto and permission shall be obtained in writing from the proper authority to do so. A copy of such permission stating the maximum size of the waste line between the receptor and the sewer, and other specific requirements, shall accompany any applications for a permit made to the Administrative Authority.

M3 Where space and conditions are such that no hazard, nuisance or unsanitary condition is evidenced, swimming pool waste water may be used for irrigation by surface or subsurface spreading.

M4 When no other means of waste water disposal is available, a drywell may be installed. Each such drywell shall be constructed in the manner prescribed for cesspools in Appendix K of this Code, and drywells receiving only filter backwash shall have a capacity of at least twice the amount of effluent discharged during one (1) normal backwash operation, but shall in no case have less than a five (5) foot (1.5m) vertical sidewall. When pool emptying or other drains are proposed, the size and leaching capacity of such drywell shall be proportionately increased to the satisfaction of the Administrative Authority. No waste water other than that from swimming pool shall discharge into any such drywell and no waste water from any swimming pool shall discharge into a private sewage disposal system.

M5 No direct connection shall be made between any storm drain, sewer, drainage system, drywell or subsoil irrigation line and any line connected to a swimming pool.

M6 Waste water from any filter, scum gutter overflow, pool emptying line or similar apparatus or appurtenance shall discharge into an approved type receptor. The flood level rim of each such receptor shall be at least six (6) inches (152.4mm) above the flood level of the adjacent ground. Each such receptor, when permitted to be connected to any part of a drainage system shall be provided with a three (3) inch (76.2mm) trap.

M7 Except as provided in M8, the discharge outlet terminal from any pool or filter shall be protected from backflow by an air gap at least six (6) inches (152.4mm) above the flood rim of the receptor.

M8 No scum gutter drain, overflow drain, backwash discharge drain, or pool emptying line shall enter any receptor below the rim unless the pool piping at its deepest point, the bottom of the filters, and the bottom of the scum gutter drain trough or overflow inlets are at least six (6) inches (152.4mm) above the overflow rim of the receptor.

M9 A positive point of potable water supply to each swimming pool shall be established and shall be installed as required by Chapter 6 of this Code.

M10 Plans for other than private swimming pools shall be approved by the Health Officer before any water supply or waste discharge permit is issued.

NOTE: The foregoing applies only to outdoor swimming, bathing, or wading pools. Plans and specifications for all indoor installations shall be submitted to the Administrative Authority for approval prior to the commencement of any work, and all piping, equipment and construction shall be equal to the types prescribed in the Installation Requirements of this Code for indoor work."

SECTION 7

That Article 1 of Chapter 9 of Division 8 of the Torrance Municipal Code is hereby repealed in its entirety and a new Article 1 of Chapter 9 of Division 8 is added in its entirety to read as follows:

"ARTICLE 1 CALIFORNIA MECHANICAL CODE

Section 89.1.1 Adoption of California Mechanical Code.

That certain document in book form, entitled "California Mechanical Code, 2010 Edition", and Appendices A, B, C, and D of the Code, published by the International Association of Plumbing and Mechanical Officials, and The California Building Standards Commission, not less than one (1) copy of which has been and is now filed in the office of the City Clerk of the City of Torrance, save and except such portions as are hereinafter deleted, modified, or amended by this ordinance, are hereby adopted by the City Council of the City of Torrance as the Mechanical Code of the City of Torrance."

SECTION 8

That Sections 89.2.2 and 89.2.3 of the Torrance Municipal Code are hereby repealed in their entirety and new Sections 89.2.2 and 89.2.3 are added to read in their entirety as follows:

"Section 89.2.2 Fees. [Administrative]

Section 115.0 and Table 1-1 of Chapter 1, Division II of the California Mechanical Code, 2010 Edition, is deleted in its entirety.

Section 89.2.3 Roof Mounted Equipment Platforms. [Climatic]

Section 303.8.1.7 of the California Mechanical Code, 2010 Edition, is hereby added to read in its entirety as follows:

“ **303.8.1.7 Roof Mounted Equipment Platforms.** All roof mounted equipment shall be located on raised platforms to allow clearance for re-roofing. The Building Official shall institute design specification for platforms on various roof configurations.”

SECTION 9

That Article 1 of Chapter 12 of Division 8 of the Torrance Municipal Code is added in its entirety to read as follows:

“ARTICLE 1 CALIFORNIA RESIDENTIAL CODE

Section 812.1.1 Adoption of California Residential Code.

Those certain documents in book form entitled “California Residential Code with Appendices,” 2010 Edition, published by the California Building Standards Commission, not less than one (1) copy each of which have been and are now filed in the office of the City Clerk of the City of Torrance, save and except such portions as are hereinafter deleted, modified, or amended by this ordinance, are hereby adopted by the City Council of the City of Torrance as the Building Code and Standards of the City of Torrance.”

SECTION 10

That Article 2 of Chapter 12 of Division 8 of the Torrance Municipal Code is added in its entirety to read as follows:

“Section 812.2.1 Authority. [Administrative]

A new section 104.12 is added to the California Residential Code, 2010 Edition, to read in its entirety as follows:

“**108.3.1.1 Authority.** The Building Official shall have the authority to adopt rules and regulations to clarify and interpret the provisions of this ordinance. The Building Official may also approve variations and omissions when such variation or omissions are not detrimental to the life, health, safety, or welfare of the public, and do not violate the intent or purpose of this code.”

Section 812.2.2 Wood Frame Structures

Section R301.1.3.2 of the 2010 Edition of the California Residential Code is amended to read as follows:

R301.1.3.2 Woodframe structures. 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 the 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.

Section 812.2.3 Seismic Design Provisions

Section R301.1.4 is added to Chapter 3 of the 2010 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 1613.12 of the California Building Code.

Section 812.2.4 Shear Wall Lines

Section R301.2.2.2.5 of the 2010 Edition of the California Residential Code is 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.
2. When the end of a braced wall panel occurs over an opening in the wall below
3. When portions of a floor level are vertically offset.

Section 812.2.5 AISI S230 Modifications

Section R301.2.2.3.5.1 is added to Section 301.2.2.3.5 of the 2010 Edition of the California Residential Code as follows:

R301.2.2.3.5.1 AISI S230, Section B1. Modify AISI S230, Section B1 to read as follows:

Modify AISI S230, Section B1 to read as follows:

Where No. 8 screws are specified, the required number of screws in a steel-to-steel connection shall be permitted to be reduced in accordance with the reduction factors in Table B1-1 when larger screws are used or when the sheets of steel being connected is

thicker than 33 mils (0.84mm). When applying the reduction factor, the resulting number of screws shall be rounded up.

Section 812.2.6 Design Flood Elevations

Section R322.1.4.1 of the 2010 Edition of the California Residential Code is amended to read as follows:

R322.1.4.1 Determination of design flood elevations. If design flood elevations are not specified, the building official is authorized to require the applicant to:

1. Obtain and reasonably use data available from a federal, state or other source; or
2. Determine the design flood elevation in accordance with accepted hydrologic and hydraulic undertaken by a registered civil engineer who shall determine that the technical methods used reflect currently accepted engineering practice. Studies, analyses and computations shall be submitted insufficient detail to allow thorough review and approval.

Section 812.2.7 Foundation Spaces

Section R401.1 of the 2010 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 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.

Section 812.2.8 Continuous Footings

Sections R403.1.2, R403.1.3, R403.1.5 of the 2010 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 shall 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.

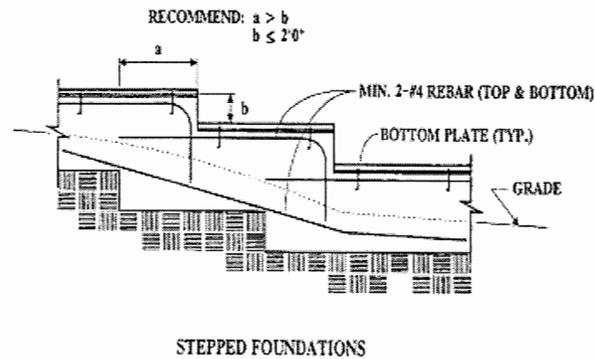
In Seismic Design Categories D₀, D₁ and D₂ where a grouted masonry stem wall is supported on a concrete footing and stem wall, a minimum of one No. 4 bar shall be installed at not more than 4 feet (1219 mm) on center. The vertical bar shall extend to 3 inches (76 mm) clear of the bottom of the footing 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, plain concrete footings without longitudinal reinforcement supporting walls and 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 1/2-inch diameter (12.7 mm) deformed reinforcing bars. Two bars shall be placed at the top and bottom of the footings as shown in Figure R403.1.5.



STEPPED FOUNDATIONS

FIGURE R403.1.5
STEPPED FOOTING

Section 812.2.9 **Wood Foundation Walls**

Section R404.2 of the 2010 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 R403.2(3). Wood foundation walls shall not be used for structures located in Seismic Design Category D₀, D₁ or D₂.

Section 812.2.10 **Design and Construction of Floors**

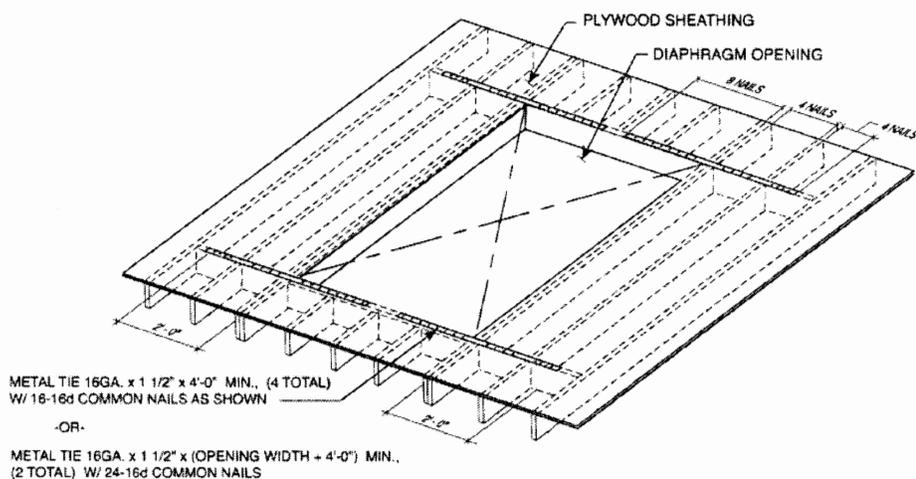
Section R501.1 of the 2010 Edition of the California Residential Code is amended to read as follows:

R501.1 Application. The provision 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 weighing less than 400 lbs and maximum height of 4 feet above the floor or attic level.

Section 812.2.11 **Openings in Horizontal Diaphragms**

Section R503.2.4 is added to Chapter 5 of the 2010 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.

- 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

Section 812.2.12 Modification to Table R602.3(1)

Lines 34 thru 37 of Table R602.3(1) of the 2010 Edition of the California Residential Code are amended to read as follows:

Other wall sheathing ^b				
34	1/2" structural cellulosic fiberboard sheathing	1/2" galvanized roofing nail	3	6
35	25/32" structural cellulosic fiberboard sheathing	1 3/4" galvanized roofing nail	3	6
36	1/2" gypsum sheathing ^d	1 1/2" galvanized roofing nail; 1 1/4" screws, Type W or S	7	7
37	5/8" gypsum sheathing ^d	1 3/4" galvanized roofing nail; 1 5/8" screws, Type W or S	7	7

Section 812.2.13 Table R602.3(2)

Table R602.3(2) of the 2010 Edition of the California Residential Code is amended to read as follows:

Wood structural panels subfloor, roof and wall sheathing to framing and particleboard wall sheathing to framing^f

up to $\frac{1}{2}$	0.097 - 0.099 Nail $2\frac{1}{4}$	3	6
$\frac{19}{32}$ and $\frac{5}{8}$	0.113 Nail 2	3	6
	0.097 - 0.099 Nail $2\frac{1}{4}$	4	8
$\frac{23}{32}$ and $\frac{3}{4}$	0.097 - 0.099 Nail $2\frac{1}{4}$	4	8
1	0.113 Nail $2\frac{1}{4}$	3	6

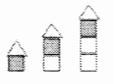
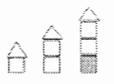
Floor underlayment: plywood-hardboard-particleboard^f

Plywood			
$\frac{1}{4}$ and $\frac{5}{16}$	$1\frac{1}{4}$ ring or screw shank nail-minimum $12\frac{1}{2}$ ga. (0.099*) shank diameter	3	6
$\frac{11}{32}$, $\frac{3}{8}$, $\frac{15}{32}$ and $\frac{1}{2}$	$1\frac{1}{4}$ ring or screw shank nail-minimum $12\frac{1}{2}$ ga. (0.099*) shank diameter	6	8 ^e
$\frac{19}{32}$, $\frac{5}{8}$, $\frac{23}{32}$ and $\frac{3}{4}$	$1\frac{1}{2}$ ring or screw shank nail-minimum $12\frac{1}{2}$ ga. (0.099*) shank diameter	6	8

Section 812.2.14 Modification to Table R602.10.1.2.(2)

Table R602.10.1.2(2) of the 2010 Edition of the California Residential Code is amended to read as follows:

TABLE R602.10.1.2(2)^{a, b, c}
BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY
(AS A FUNCTION OF BRACED WALL LINE LENGTH)

SOIL CLASS D ^a WALL HEIGHT = 10 FT 10 PSF FLOOR DEAD LOAD 15 PSF ROOF/CEILING DEAD LOAD BRACED WALL LINE SPACING ≤ 25 FT			MINIMUM TOTAL LENGTH (feet) OF BRACED WALL PANELS REQUIRED ALONG EACH BRACED WALL LINE			
Seismic Design Category (SDC)	Story Location	Braced Wall Line Length	Method LIB	Methods ^b DWB, SFB, GB, PBS, PCP, HPS	Method WSP	Continuous Sheathing
SDC D ₀ or D ₁		10	NP	6.0	2.0	1.7
		20	NP	12.0	4.0	3.4
		30	NP	18.0	6.0	5.1
		40	NP	24.0	8.0	6.8
		50	NP	30.0	10.0	8.5
		10	NP	NP	4.5	3.8
		20	NP	NP	9.0	7.7
		30	NP	NP	13.5	11.5
		40	NP	NP	18.0	15.3
		50	NP	NP	22.5	19.1
		10	NP	NP	6.0	5.1
		20	NP	NP	12.0	10.2
		30	NP	NP	18.0	15.3
		40	NP	NP	24.0	20.4
		50	NP	NP	30.0	25.5

SDC D ₂		10	NP	8.0	2.5
		20	NP	16.0	5.0
		30	NP	24.0	7.5
		40	NP	32.0	10.0
		50	NP	40.0	12.5
		10	NP	NP	5.5
		20	NP	NP	11.0
		30	NP	NP	16.5
		40	NP	NP	22.0
		50	NP	NP	27.5
		10	NP	NP	NP
		20	NP	NP	NP
		30	NP	NP	NP
		40	NP	NP	NP
		50	NP	NP	NP

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

Section 812.2.15 Modification to Table R602.10.2

Table R602.10.2 of the 2010 Edition of the California Residential Code is amended to read as follows:

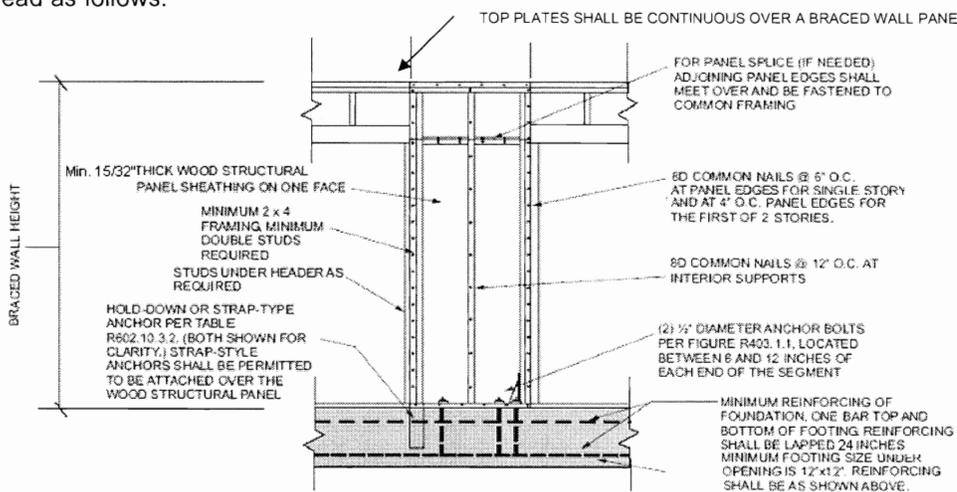
TABLE R602.10.2
INTERMITTENT BRACING METHODS^a

WSP	Wood structural panel (see Section R604)	15/32"		8d common (2 1/2" x 0.131) nails at 6" spacing (panel edge) at 12" spacing (intermediate supports), 3/8" edge distance to panel edge
SFB	Structural fiberboard sheathing	1/2" or 25/32" for maximum 16" stud spacing		1 1/2" galvanized roofing nails or 8d common (2 1/2" x 0.131) nails at 3" spacing (panel edges) at 6" spacing (intermediate supports)
GB	Gypsum board	1/2"		*Nails or screws at 7" spacing at panel edges including top and bottom plates; for all braced wall panel locations for exterior sheathing nail or screw size, see Table R602.3(1); for interior gypsum board nail or screw size, see Table R702.3.5
PBS	Particleboard sheathing (see Section R605)	3/8" or 1/2" for maximum 16" stud spacing		1 1/2" galvanized roofing nails or 8d common (2 1/2" x 0.131) nails at 3" spacing (panel edges) at 6" spacing (intermediate supports)
PCP	Portland cement plaster	See Section R703.6 For maximum 16" stud spacing		1 1/2", 11 gage, 7/16" head nails at 6" spacing

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

Section 812.2.16 Figure R602.10.3.2

Figure R602.10.3.2 of the 2010 Edition of the California Residential Code is amended to read as follows:



**FIGURE R602.10.3.2
ALTERNATE BRACED WALL PANEL**

Section 812.2.17 Figure R602.10.3.3

Figure R602.10.3.3 of the 2010 Edition of the California Residential Code is amended to read as follows:

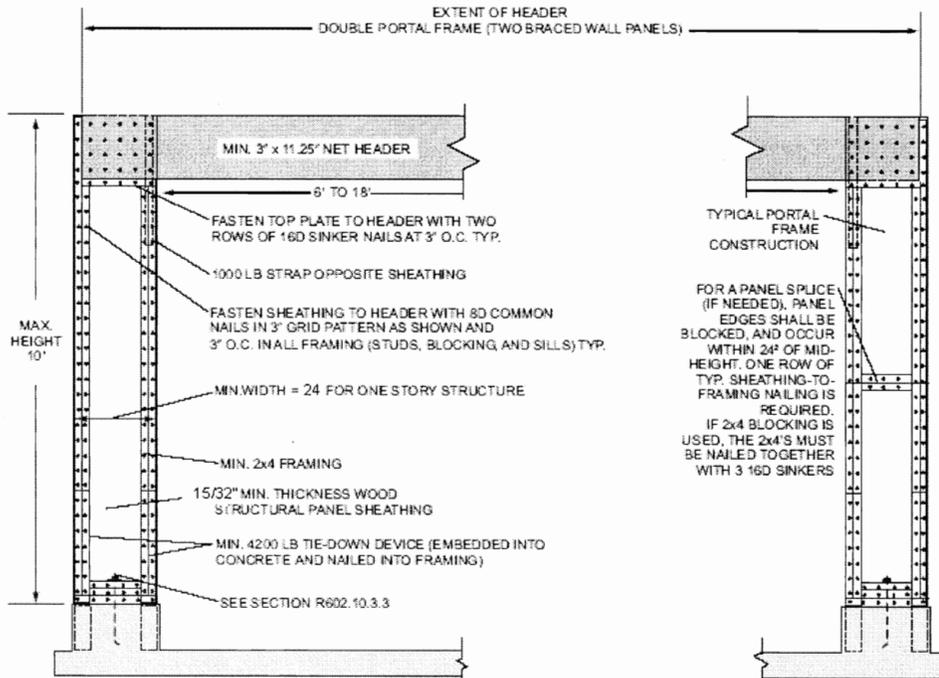


FIGURE R602.10.3.3
METHOD PFH: PORTAL FRAME WITH HOLD-DOWNS AT DETACHED GARAGE
DOOR OPENINGS

Section 812.2.18 Wood Panel Installation

Item 1 of Section R602.10.3.3 of the 2010 Edition of the California Residential Code is amended to read as follows:

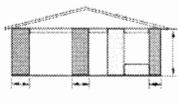
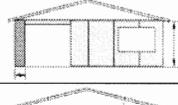
1. Each panel shall be fabricated in accordance with Figure R602.10.3.3. The wood structural panel sheathing shall extend up over the solid sawn or glued-laminated header and shall be nailed in accordance with Figure R602.10.3.3. A spacer, if used with a built-up header, shall be placed on the side of 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. One anchor bolt not less than 5/8-inch-diameter (16 mm) and installed in accordance with Section R403.1.6 shall be provided in the center of each sill plate. The hold-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. The foundation shall be reinforced as shown on Figure R602.10.3.2. This reinforcement shall be lapped not less than 24 inches (610 mm) with the reinforcement required in the continuous foundation located directly under the braced wall line.

Section 812.2.19 Table R602.10.4.1

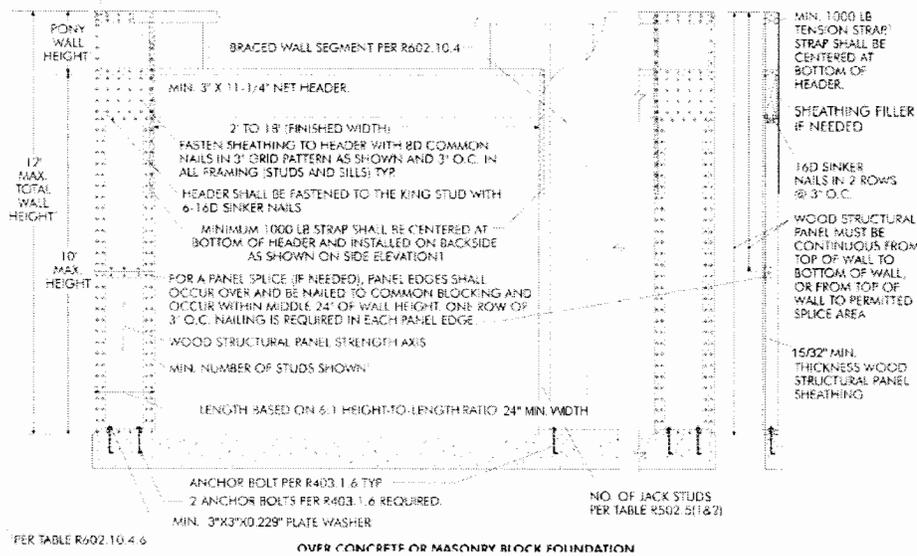
Table R602.10.4.1 of the 2010 Edition of the California Residential Code is amended to read as follows:

**TABLE R602.10.4.1
CONTINUOUS SHEATHING METHODS**

METHOD	MATERIAL	MINIMUM THICKNESS	FIGURE	CONNECTION CRITERIA
CS-WSP	Wood structural panel	15/32"		8d common (2" x 0.113") nails at 6" spacing (panel edges) and at 12" spacing (intermediate supports).
CS-G	Wood structural panel adjacent to garage openings and supporting roof load only ^{a,b}	15/32"		See Method CS-WSP
CS-PF	Continuous portal frame	See Section R602.10.4.1.1		See Section R602.10.4.1.1

Section 812.2.20 **Figure R602.10.4.1.1**

Figure R602.10.4.1.1 of the 2010 Edition of the California Residential Code is amended to read as follows:



Section 812.2.21 **Braced Wall Panel Support**

Section R602.10.7.1 of the 2010 Edition of the California Residential Code is deleted in its entirety:

Section 812.2.22 **Parapet Walls**

Section R606.2.4 of the 2010 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.

Section 812.2.23 **Masonry Elements**

Section R606.12.2.2.3 of the 2010 Edition of the California Residential Code is amended to read as follows:

R606.12.2.2.3 Reinforcement of requirements for masonry elements. Masonry elements listed in Section R606.12.2.2 shall be reinforced in either the horizontal or vertical direction as shown in Figure R606.11(3) and in accordance with the following:

1. Horizontal reinforcement. Horizontal joint reinforcement shall consist of at least one No. 4 bar spaced not more than 48 inches (1219 mm). 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 8 inches (406mm) of the ends of masonry walls.

Exception of Section 602.3.2 of the 2010 Edition of the California Residential Code is amended to read as follows:

Exception: In 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.

Footnote "i" is added to Table R802.5.1(9) of the 2010 Edition of the California Residential Code to read as follows:

- i. Edge distances, end distances and spacings for nails shall be sufficient to prevent splitting of the wood.

Section 812.2.24 Lateral Support

Section R802.8 of the 2010 Edition of the California Residential Code is amended to read as follows:

R802.8 Lateral support. Roof framing members and ceiling joists having a depth-to-thickness ratio exceeding 2 to 1 based on nominal dimensions shall be provided with lateral support at points of bearing to prevent rotation. For roof rafters with ceiling joists attached per Table R602.3(1), the depth-thickness ratio for the total assembly shall be determined using the combined thickness of the rafter plus the attached ceiling joist.

Section 812.2.25 Wood Trusses

Section R802.10.2 of the 2010 Edition of the California Residential Code is amended to read as follows:

R802.10.2 Design. Wood trusses shall be designed in accordance with accepted engineering practice. The design and manufacture of metal-plate-connected wood trusses shall comply with ANSI/TPI 1. The truss design drawings shall be prepared by a registered professional.

Section 812.2.26 Openings in Horizontal Diaphragms

Section R803.2.4 is added to Chapter 8 of the 2010 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.

Section 812.2.27 Vertical Reinforcing

Section R1001.3.1 of the 2010 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.”

SECTION 11

That Article 1 of Chapter 13 of Division 8 of the Torrance Municipal Code is hereby is added in its entirety to read as follows:

“ARTICLE 1 CALIFORNIA GREEN BUILDING CODE

Section 813.1.1 Adoption of California Green Building Code.

Those certain documents in book form entitled “California Green Building Code with Appendices,” 2010 Edition, published by the California Building Standards Commission, not less than one (1) copy each of which have been and are now filed in the office of the City Clerk of the City of Torrance, save and except such portions as are hereinafter deleted, modified, or amended by this ordinance, are hereby adopted by the City Council of the City of Torrance as the Building Code and Standards of the City of Torrance.”

SECTION 12

That Article 1 of Chapter 13 of Division 8 of the Torrance Municipal Code is hereby repealed in its entirety and a new Article 1 of Chapter 13 of Division 8 is added in its entirety to read as follows:

“Section 813.2.1 Mandatory and Voluntary Requirements

Section 101.10 of the 2010 Edition of the California Green Building Standards Code is amended to read as follows:

101.10 Mandatory and voluntary requirements. This code contains both mandatory and voluntary green building measures. Mandatory and voluntary measures are identified in the appropriate application checklist contained in this code. The mandatory measures of Chapter 4 and voluntary measures of Appendix A4 shall apply to new low-rise residential buildings. The mandatory measures of Chapter 5 and voluntary measures of Appendix A5 shall apply to all buildings which are not low-rise residential buildings.

Section 813.2.2 Low-Rise Residential Building

LOW-RISE RESIDENTIAL BUILDING. A building that is of Occupancy Group R and is six stories or less, or that is a one- or two-family dwelling or townhouse.

Section 813.2.3 Irrigation Controllers

Section 4.304.1 of the 2010 Edition of the California Green Building Standards Code is amended to read as follows:

4.403.1 Irrigation controllers. Automatic irrigation system controllers for landscaping provided and installed at the time of final inspection and shall comply with the following:

1. Controllers shall be weather- or soil moisture-based controllers that automatically adjust irrigation in response to changes in plants' needs as weather conditions change.
2. Weather-based controllers without integral rain sensors or communication systems that account for local rainfall shall have a separate wired or wireless rain sensor which connects or communicates with the controller(s). Soil moisture-based controllers are not required to have rain sensor input.”

SECTION 13

Any provisions of the Torrance Municipal Code, or appendices thereto, or any other ordinances of the City inconsistent herewith to the extent of such inconsistencies and no further, are hereby repealed.

SECTION 14

If any section, subsection, sentence, clause, or phrase of this ordinance is for any reason held to be invalid or unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of the ordinance. The City Council hereby declares that it would have passed this ordinance and each section, subsection, sentence, clause and phrase thereof, irrespective of the fact that any one or more sections, subsections, sentences, clauses, or phrases be declared invalid or unconstitutional.

SECTION 15

Any person violating any of the provisions of this ordinance shall be guilty of a misdemeanor, and upon conviction thereof, shall be subject to a fine not exceeding One Thousand Dollars (\$1000.00) or six (6) months in the County Jail of Los Angeles County, or both such fine and imprisonment in the discretion of the Court.

SECTION 16

This ordinance will take effect thirty (30) days after the date of its adoption. Within fifteen (15) days following adoption, this ordinance or a summary of this ordinance, if authorized by the City Council, will be published at least once in the Daily Breeze, a newspaper of general circulation, published and circulated in the City of Torrance.

Introduced and approved this _____ day of _____, 2010.

Adopted and passed this _____ day of _____, 2010.

Frank Scotto
City of Torrance

ATTEST:

Sue Herbers, City Clerk

APPROVED AS TO FORM:

John L. Fellows III
City Attorney

By: _____

CITY OF TORRANCE
Community Development Department

**ADOPTION OF
THE 2010 CALIFORNIA BUILDING
STANDARDS CODE
WITH CITY AMENDMENTS**

**A REPORT OF
THE COMMUNITY DEVELOPMENT DIRECTOR
NOVEMBER 01, 2010**

JEFFERY W. GIBSON
COMMUNITY DEVELOPMENT DIRECTOR

TABLE OF CONTENTS

	<u>PAGE</u>
PREFACE	1
A. BACKGROUND	2
B. FINDINGS OF FACT	2
C. 2010 CALIFORNIA BUILDING CODE	3
D. 2010 CALIFORNIA ELECTRICAL CODE	12
E. 2010 CALIFORNIA PLUMBING CODE	13
F. 2010 CALIFORNIA MECHANICAL CODE	14
G. RECOMMENDATION	14

The following facts supporting the City Amendments to the California Building Standards Code are presented by section in Division 8 of the Municipal Code:

2010 CALIFORNIA BUILDING CODE

SECTION 81.2.1 AUTHORITY. [Administrative]

This section specifies that the Building Official is the one responsible to make code interpretations, to clarify the intent, and approve variations to the Uniform Building Codes. It provides a clarification to the administrative section of the Code.

SECTION 81.2.2 DEFINITIONS. [Administrative]

This section was modified to provide adequate access for the fire department in structures over forty (40) feet in height and in buildings with more than one level of basement. The presence of strong winds in Torrance and the potential for the spread of fire necessitates the need for this section.

SECTION 81.2.3 EXEMPTED WORK. [Geological]

Allows certain minor construction projects to be exempted from the requirements for a building permit. The following exemptions have been revised for the following reasons:

The size for all exempted accessory buildings (exception Number 1) was reduced to 60 square feet from 120 square feet except for prefabricated metal buildings. Due to the geological conditions in Torrance, the heavy weight types of construction with 120 square feet were deemed to be too large because of the high seismic loads that the heavier weight would generate. The lightweight prefabricated metal building will be exempted up to 120 square feet, as the Uniform Building Code allows, since the lighter type construction will generate smaller seismic loads.

Oil derrick construction was deleted because it is regulated in another section of the Municipal Code (97.5.2).

Raised platforms, walks and driveways were deleted since they are regulated in the grading and paving sections of the Code.

Prefabricated pools (exception Number 9) are exempted from permits when the depth of water is less than 12 inches in height. Safety requirements dictate security fences are needed when the water depth is deeper than or at 12" on height.

Signal receiving antennae (exception Number 10) was exempted due to low profile area that the antennae projects in the wind.

The height of fences (exception Number 11) over three feet in height is controlled by the land use regulations of the Torrance Municipal Code. Fences over three feet in height require regulation since both the high winds prevalent in Torrance and the high

probability of a seismic event in the area can cause damage and injuries from the falling walls.

SECTION 81.2.4 SPECIAL CERTIFICATE OF OCCUPANCY. [Administrative]

A Special Certificate of Occupancy has been used locally since 1970 to acknowledge the voluntary inspection of existing building as a service to the public.

SECTION 81.2.5 FIRE RATINGS BETWEEN SIMILAR OCCUPANCIES. [Climatic]

Provision for one-hour fire-resistive construction between tenant spaces has been in the Torrance Code since 1970, and is needed because of the fire hazard due to the prevailing high winds in Torrance which will spread fire throughout buildings. The close proximity to major faults that can produce a significant earthquake causing the spread of fire in common occupancy buildings requires higher fire protection construction.

SECTION 81.2.6 SMOKE DETECTORS IN RESIDENTIAL OCCUPANCIES. [Climatic]

Since 1981, the City of Torrance has required the certification of the installation of smoke detectors upon the resale of property. Since residential property will be resold more often than it would be altered or enlarged, this change provides an opportunity to obtain minimum life and property protection deemed necessary in a high wind area such as Torrance. When the high winds occur, the possibility of fire danger is high. For example, the Santa Ana winds are a prime example of these types of phenomena that can trigger windstorms and fan fires to catastrophic proportions. The recent earthquake such as the Northridge event, several fires were caused by the occurrence and with the knowledge that Torrance has a trace of an earthquake fault and only a few miles from a known active fault. The installation of smoke detectors represents a significant early warning signal for the protection of life and property. The implementation of these smoke detectors has given the residences of Torrance the critical precious seconds to become aware of a fire hazard. The institution of smoke detectors in Torrance has proven its value in the lives the device has saved.

SECTION 81.2.8 AUTOMATIC FIRE EXTINGUISHING SYSTEMS. [Climatic]

Included are changes to the fire sprinkler requirements to maintain more restrictive standards in Torrance that have been in effect since 1972. The high wind hazard in Torrance generates a weather condition that emphasizes the need for fire sprinklers. Fire could spread to more dense occupancies or to hazardous areas without the requirement for sprinklers because of these winds.

The increasing number of medium height buildings proposed to be built in Torrance increases the degree of hazard and reinforces the need for sprinklers.

Due to the close proximity to major geologic faults and the delay caused by an earthquake for Fire Department response, fire sprinklers can keep fires from spreading throughout buildings and save life and property.

SECTION 81.2.9 POWER SOURCE FOR SMOKE-CONTROL SYSTEMS.
[Climatic]

The exception is related to Sections 81.2.3 and 81.2.13, which requires pressurization of the exit enclosures in structures over four (4) stories or higher.

SECTION 81.2.10 STAIRS IN SMOKEPROOF ENCLOSURES. [Climatic]

The exception is related to Sections 81.2.3 and 81.2.13, which requires pressurization of the exit enclosures in structures over four (4) stories or higher

SECTION 81.2.11 SMOKE AND HEAT VENTS

SECTION 81.2.12 STAIRWAY TO ROOF. [Climatic]

This section requires all stairways to access the roof if the building is four (4) stories or higher. The need for this section stems from higher volume of combustible material that is present in structures of four (4) stories and higher. The protective measures are to aid the occupants in reaching the stairways and keep the stairwell smoke-free. The presence of strong winds in Torrance and the potential for the spread of fire necessitates the need for this section. The additional stairs also aids the occupants in exiting the building in the event of an earthquake where fire is a real possibility. An additional measure for the locking of the roof access door is to ensure that access to the roof is only gained during emergency events.

SECTION 81.2.13 SMOKE PROOF ENCLOSURES. [Climatic]

The justification for this exception is similar to Section 81.2.13 for this.

SECTION 81.2.14 ROOF DRAINAGE WATER. [Climatic]

This section was amended to clarify the intended route for the roof drainage to a public way. With the sudden downpours as witnessed in Torrance during recent times, the need to direct roof runoff is mandatory to prevent flooding from occurring. This measure is to maintain the positive way of life and property in the City of Torrance.

SECTION 81.2.15 MINIMUM SLOPE OF BUILT-UP ROOFS. [Climatic]

The roof slope was revised to require a minimum pitch to insure that catastrophic accumulation of rainwater does not occur. Ponding and flooding of flat roofs have a potential for collapse and recent high intensity rains have caused damage to roof structures in the City of Torrance from these types of occurrences. Having the roof built with a positive slope, lessens the possibility for problems in the future.

SECTION 81.2.16 FLEXIBLE DIAPHRAGM. [Geological]

This amendment is needed due to local geological conditions and the City's proximity to earthquake faults. This amendment will update this section to be current with ASCE 7 Standards.

SECTION 81.2.17 DISPLACEMENTSECTION 81.2.18 ASCE MODIFICATIONS

This amendment is necessary since the City of Torrance is located in a region with a high level of seismic activity. The amendment will also update this section to current ASCE 7 Standards.

SECTION 81.2.18 EARTHQUAKE REGULATIONS [Geological]

Includes consideration of Torrance Seismic Safety Element of the General Plan in the seismic design of buildings due to the Palos Verdes fault in Torrance.

SECTION 81.2.19 SUSPENDED CEILINGSSECTION 81.2.20 SPECIAL INSPECTION FOR CONCRETESECTION 81.2.21 CONNECTION GRADE BEAMSSECTION 81.2.22 SPECIAL INSPECTIONS STATEMENT

This amendment is editorial and modifies the section to be consistent with provisions of the current AISC and ACI Standards.

SECTION 81.2.23 STRUCTURAL OBSERVATION

Due to the city's proximity to earthquake faults and from investigation results of the 1994 Northridge earthquake. This quality control amendment is necessary.

SECTION 81.24-31 FOUNDATION INVESTIGATION AND DESIGN [Geological]

The reason for these amendments is the highly expansive soil present in the City of Torrance. A competent consultant must confirm the presence of the highly expansive soil along with a recommendation addressing any potential soil liquefaction problems that may exist on the site. The design parameters suggested by the soil consultant or engineering geologist should limit the effects of this type of soil. Special concerns in hillside areas require a competent consultant to address soil type, drainage compaction and other related topics since a known earthquake fault exists at the base of this area of Torrance.

SECTION 81.2.32 ACI-318 MODIFICATIONS

This amendment is necessary since the City of Torrance is located in a region with a high level of seismic activity. The amendment will also update this section to current ACI-318 Standards.

SECTION 81.2.33 SEISMIC DESIGN CATEGORY REQUIREMENTSSECTION 81.2.34 PLAIN CONCRETE WALLS, FOOTING AND PEDESTALSSECTION 81.2.35 CONSUMABLES FOR WELDINGSECTION 81.2.36 MODIFICATIONS TO AISC-341 [Geological]

This amendment is necessary since the City of Torrance is located in a region with a high level of seismic activity. The amendment will also update this section to current AISC-341 Standards.

SECTION 81.2.37 FASTENER REQUIREMENTSSECTION 81.2.38 WOOD RETAINING WALLS

The City of Torrance is unique in that the soil is highly expansive and the use of a wood foundation system is not conducive in this type of soil material. The wetting and drying cycle from the rainy to dry season in these highly expansive soils would lead to settlement problems. This type of foundation would be further compromised in the event of a seismic occurrence.

SECTION 81.2.39 NAILS AND CONNECTORS

The justification to this section is similar to Section 81.2.27.

SECTION 81.2.40-42 WOOD DIAPHRAGMS AND SHEAR WALLS

The modifications to these sections are necessary to resist the probable seismic activity that has occurred in the recent past. Torrance has a trace of a fault within its borders and a more active fault within a few miles of its city limits. The limitations of these types of structural systems are meant to safeguard life and property while preserving the structure from total collapse.

SECTION 81.2.43 CONVENTIONAL LIGHT FRAME CONSTRUCTION [Geological]

This amendment is necessary due to local geological conditions and the fact that the City of Torrance is located in a region with a high level of seismic activity. Studies and research after the last major earthquakes indicate that some of the prescriptive

methods allowed by this section performed very poorly and this amendment removes those methods. The remaining prescriptive methods still allow conventional building design and construction for uncomplicated structures without the need for a specific engineering analysis. This amendment limits structures designed to the parameter of section to one story structures.

Since the City of Torrance is located in a seismically active area, the use of these types of products is not conducive in this region. The fact that Torrance has a trace of a known earthquake fault and is within miles of another active fault warrants this exclusion from the code. The use of this type of material should have specific values from an approved testing agency justifying the product's limitations. This exclusion will ensure the safety and well being for the citizens of Torrance.

Deletes the prescriptive design provisions of the code and requires that each new masonry chimney be designed and engineered to the requirements in the general design sections of the Code. The high probability of a seismic event which could cause damage and injuries from falling chimneys and recent local earthquake experiences, make this more restrictive amendment necessary.

SECTION 81.2.44 STONE AND MASONRY VENEER

SECTION 81.2.45 BRACED WALL LINES

SECTION 81.2.46 ATTACHMENT OF SHEATHING

SECTION PATIO COVER DESIGN LOADS [Climatic]

The item increases the design roof load of attached patios as worded in previous editions of the code since 1970. This is necessary because the homeowners usually enclose the patios into family rooms without benefit of permits. They do this because the open patio cannot be used due to the high westerly winds in Torrance. This wind condition makes the open patios unusable. We have been able to convert patios to legal rooms due in part to this provision of the existing code.

SECTION 81.2.47 LIFE SAFETY REQUIREMENTS FOR EXISTING BUILDINGS [Climatic]

This section was amended to provide the minimum amount of fire safety for the occupants of buildings that are currently existing and nonconforming. Since Torrance has occasions for high winds, the probability for the spread of fire is greatly enhanced during these periods. The amendment requires upgrades to exiting systems, particularly the corridor construction. In requiring the construction upgrades in the exit corridors, the occupants have additional time for the evacuation of the building. This amendment also administratively modifies the time frame requirement for processing the plans and for the completion of the scope of work.

SECTION 81.2.48 EXCAVATION AND GRADING [Geological]

This section was amended to include hillside properties in the City of Torrance. These hillside areas have been the source of problems in the past due to the lack of regulations. By issuing regulations, these areas may be monitored to insure that compaction and proper grading is accomplished by competent people to insure the life, limb, property and public welfare to the citizens of Torrance.

SECTION 81.2.49 DEFINITIONS [Geological]

This section was amended to define terms related to the hillside grading and paving requirements. The hillside condition requires expertise from a competent or qualified person. That person should be capable of dictating requirements to ensure safety and maintenance of the hillside. The need for additional terms also stems from the expansive soil conditions that exist in the limits of the city. The hillside and paving terms are defined in this section. These terms are used in latter sections in order for the implementation of requirements.

SECTION 81.2.50 PERMITS REQUIRED [Geological]

Several items were included in order to insure proper compaction and maintenance of grading regulations on paved areas. These items are critical in assuring that problems from expansive soils are alleviated in the paved lots. The improper grading and paving of these lots leads to other more serious problems such as settlement and flooding.

SECTION 81.2.51 GRADING PERMIT REQUIREMENTS [Geological]

Because of the climatic effects of El Nino and the geological conditions that exist in Torrance, the need for the drainage report is critical to the maintenance of property. Flooding caused by the effects of El Nino was prevalent in other communities and the City of Torrance needs to adhere to these regulations in order to preserve and to protect life and property within the confined Torrance. Since Torrance is located in a basin, the depositing of highly expansive soils throughout the region is common place. Special attention to these soil conditions requires the implementation of these regulations to ensure proper paving and drainage. These minimum requirements can ensure the life, safety and maintenance of property for the City of Torrance.

SECTION 81.2.52 FILLS [Geological]

With the recent occurrence of heavy rains such as the El Nino type of events, the need for compaction of material is critical to the maintenance of property in Torrance. Uncompacted fill material can lead to differential settlement and the possibility of property damage. In sloped conditions, the compaction of material is crucial in heavy rainy seasons. If the soil banks are uncertified, material that is wasted off these banks clogs the drainage paths. Mudslides may develop and further damage may occur endangering life and property. By requiring an approved soil testing agency to certify the compaction of grade material, the City of Torrance is assured that the grading plans will be maintained and survive the recent El Nino type events.

SECTION 81.2.53 DRAINAGE AND TERRACING [Geological]

Torrance has experienced heavy rainfall in the past and a prime example is the El Nino type of event. These types of events have caused slope failures and mud slides and these additional requirements are intended to stabilize the slopes. These regulations are to safeguard the lives and property for the citizens of Torrance.

The El Nino type of event has forced the City of Torrance to enforce these regulations to limit ponding that may occur. These events are sometimes sudden and these regulations are to limit the depth of water in these collection areas. These areas are generally parking lots and are only temporary holding areas for delaying runoff into the flood control system. Minor ponding in designated locations saves life and property from damage.

SECTION 81.2.54 EROSION CONTROL [Topographical]

This section was amended to dictate the requirement for the planting of plant material. The list of approved planting material is critical in the maintenance of the slopes in the hillside areas of Torrance. The use of an irrigation system and the type of groundcover used on the slopes are major criteria for stabilization of the slope. Thereby safeguarding the life and property in the City of Torrance.

SECTION 81.2.55 COMPLETION OF WORK [Administrative]

This amendment is editorial and is intended to provide clarification on the various reports and documents required at the time of completion.

SECTION 81.2.56 PERMIT FEES; EXCAVATION , GRADING AND PAVING [Geological]

2010 CALIFORNIA ELECTRICAL CODE**SECTION 82.2.1 ANNEX H ADMINISTRATION AND ENFORCEMENT.**
[Administrative]**SECTION 82.2.2 USED MATERIALS [Geological]**

Due to the proximity to earthquake faults and the high seismic activity the City of Torrance can potentially experience, used electrical materials would be a very high fire hazard.

SECTION 82.2.3 Aluminum conductors. [Geological]**SECTION 82.2.4 USES NOT PERMITTED [Geological]**

The limitation of NM, NMC and NMS cables has been eliminated in commercial application due to increased fire load it possesses. The increased fire load represents an increase in heat, smoke and flammability due to the combustible of the covering of the wires. In Torrance, the occurrence of high winds such as the Santa Ana presents an opportunity for fire to develop. The increased fire hazard in allowing buildings with these combustible cables only escalates the danger to life and property in the City of Torrance.

2010 CALIFORNIA PLUMBING CODE

SECTION 83.1.1 ADOPTION OF CALIFORNIA PLUMBING CODE

SECTION 83.2.2 MINIMUM NUMBER OF REQUIRED FIXTURES [Administrative]

An editorial change to administratively clarify the minimum number of required plumbing fixtures.

SECTION 83.2.3 DRAINAGE SYSTEM MATERIALS. [Climatic]

The elimination of additional combustible material to structures over two stories in height is necessary to reduce the fire load when a high wind condition exists such as a Santa Ana. When high winds occur, the smoke and flame that is generated has toxic gases and the inclusion of plastic pipe material only increases the level of toxicity and flammability to the building. The addition of plastic material also increases the level of heat in the building. The ability of the building's occupants to properly exit the building in a timely manner is compromised. In recent times, earthquakes have caused fires in building and the reminder of the Northridge quake is still vivid. The elimination of these types of products enhances the ability of its citizens to protect life and property.

SECTION 83.2.4 BUILDING SEWER MATERIALS. [Climatic]

This more restrictive standard in the City of Torrance is required due to the prevalent high wind conditions that occur in this area. The justification for this more restrictive standard is similar to that stated in Section 83.2.3.

SECTION 83.2.5 VENTS [Climatic]

The prevailing high wind conditions that can occur in this area warrant a more restrictive standard than provided by base code. The justification for this more restrictive standard is similar to that stated in Section 83.2.3.

SECTION 83.2.7 RAINWATER SYSTEMS [Climatic]

With the strong winds that can prevail in the City of Torrance, smoke and fire have a good chance of spreading. This amendment restricts the type of material that is allowable to less combustible types in buildings more than two stories in height. The justification is similar to that stated in Section 83.2.3.

SECTION 83.2.8 SWIMMING POOLS [Administrative]

Swimming pool regulations were removed from the Plumbing Code in 1985. The regulations added by this section are basically the same as previously enforced.

2010 CALIFORNIA MECHANICAL CODE**SECTION 89.1.1 ADOPTION OF CALIFORNIA MECHANICAL CODE****SECTION 89.2.2 FEES [Administrative]**

No proposed changes to the fees. Existing fees will remain as specified in the most current Resolution.

SECTION 89.2.3 ROOF MOUNTED EQUIPMENT PLATFORMS [Climatic]

Buildings in Torrance have in past years suffered roof damage due to ponding water from winter storms with high, short-term rain intensity. This amendment requiring a platform at roof equipment will allow for improved roofing installations and better performance of the roof drainage systems during these intense, short-term periods of rainfall.

2010 CALIFORNIA RESIDENTIAL BUILDING CODE

SECTION 812.1.1 ADOPTION OF CALIFORNIA RESIDENTIAL BUILDING CODE

SECTION 812.2.1 AUTHORITY. [ADMINISTRATIVE]

SECTION 812.2.2 WOOD FRAME STRUCTURES

SECTION 812.2.3 SEISMIC DESIGN PROVISIONS

SECTION 812.2.4 SHEAR WALL LINES

SECTION 812.2.5 AISI S230 MODIFICATIONS

SECTION 812.2.6 DESIGN FLOOR ELEVATIONS

SECTION 812.2.7 FOUNDATION SPACES

SECTION 812.2.8 CONTINUOUS FOOTINGS

SECTION 812.2.9 WOOD FOUNDATION WALLS

SECTION 812.2.10 DESIGN AND CONSTRUCTION OF FLOORS

SECTION 812.2.11 OPENINGS IN HORIZONTAL DIAPHRAGMS

SECTION 812.2.12 MODIFICATION TO TABLE R602.3(1)

SECTION 812.2.13 TABLE R602.3(2)

SECTION 812.2.14 MODIFICATION TO TABLE R602.10.1.2.(2)

SECTION 812.2.5 MODIFICATION TO TABLE R602.10.2

SECTION 812.2.16 FIGURE R602.10.3.2.

SECTION 812.2.17 FIGURE R602.10.3.3.

SECTION 812.2.18 WOOD PANEL INSTALLATION

SECTION 812.2.19 TABLE R602.10.4.1.

SECTION 812.2.20 FIGURE R602.10.4.1.1

SECTION 812.2.21 BRACED WALL PANEL SUPPORT

SECTION 812.2.22 PARAPET WALLS

SECTION 812.2.23 MASONRY ELEMENTS

SECTION 812.2.24 LATERAL SUPPORT

SECTION 812.2.25 WOOD TRUSSES

SECTION 812.2.26 OPENINGS IN HORIZONTAL DIAPHRAGMS

SECTION 812.2.27 VERTICAL REINFORCING

2010 CALIFORNIA GREEN BUILDING CODE

SECTION 813.1.1 ADOPTION OF CALIFORNIA GREEN BUILDING CODE

SECTION 813.2.1 MANDATORY AND VOLUNTARY REQUIREMENTS

SECTION 813.2.2 LOW-RISE RESIDENTIAL BUILDING

SECTION 813.2.3 IRRIGATION CONTROLLERS

RECOMMENDATION

The Community Development Director recommends approval of the expressed findings and that they be filed with the California Building Standards Commission with the necessary resolution adopting the expressed findings.

Ordinance Summary
TORRANCE CITY COUNCIL ORDINANCE NO.

On November 23, 2010 the City Council of the City of Torrance as follows:

1. Adopts by reference the edition of the California Building Code, 2010 edition, volumes 1 and 2 with appendices, the 2010 edition of the California Electrical Code, the 2010 edition of the California Mechanical Code and the 2010 edition of the California Plumbing Code, each with appendices, the 2010 California Residential Code, and the 2010 California Green Building Code.
2. The amendments to these uniform codes include the following subjects: authority of the Building Official, certain excepted work fees, certificates of occupancy, fire ratings, smoke detectors, fire extinguisher systems, group occupancies, power sources for smoke control, stairs to roof, vestibules, light and ventilation, roof drainage, roof cementing materials, seismic regulation, foundation investigation, diaphragm dimension ratios, excavation and fill hazards, definitions and other grading requirements, bonds and fees.
3. Certain definitions and regulations related to the California Electrical Code and concerning such things as permits, fees, covering of work, corrections, disconnection and installation, materials, service and ratings and service grounds.
4. Certain definitions and regulations related to the California Plumbing Code, such as authority, permits, fees, plastic pipes, drainage systems, vents, rainwater systems and swimming pools.
5. Certain definitions and regulations related to the California Mechanical Code, such as fees and roof mounted equipment.
6. Certain definitions and regulations related to the California Residential Code such as certain expected work and seismic regulations.
7. Certain definitions and regulations related to the California Green Building Code such as mandatory requirements and irrigation controls.
8. All violations of the uniform codes adopted by this ordinance are misdemeanors.

*****City Clerk to add a paragraph stating that copies of the ordinance are available at the City clerk's office and stating the names of the City Council members that voted in favor and those that voted against.*****

