ORDINANCE NO.

AN ORDINANCE OF THE CITY COUNCIL OF THE CITY OF LONG BEACH AMENDING THE LONG BEACH MUNICIPAL CODE BY AMENDING AND RESTATING IN THEIR ENTIRETY CHAPTERS 18.04, 18.08, 18.12, 18.16, 18.24, AND 18.28; BY AMENDING SECTIONS 18.36.010, 18.36.015, 18.36.030, 18.40.010, 18.40.020, 18.40.022, AND 18.99.010; BY ADDING CHAPTERS 18.69, 18.70, 18.71, 18.72, AND BY REPEALING SECTIONS 18.32.310, 18.36.040, 18.36.090, 18.36.091, 18.36.092, AND CHAPTERS 18.56 AND 18.72, ALL RELATING TO ADOPTION OF THE LATEST CALIFORNIA BUILDING, ELECTRICAL, MECHANICAL AND PLUMBING CODES AND THE UNIFORM HOUSING CODE

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The City Council of the City of Long Beach ordains as follows:

Section 1. Chapter 18.04 of the Long Beach Municipal Code is amended in its entirety and restated to read as follows:

CHAPTER 18.04

GENERAL PROVISIONS

18.04.010 Title.

This Title shall be known as the “Long Beach Building Code,” a portion of the “Long Beach Municipal Code,” and wherever the word “code” is used in this Title, it shall mean the “Long Beach Building Code.”

18.04.020 Purpose.

The purpose of this code is to establish the minimum requirements

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to safeguard the public health, safety and general welfare through structural strength, means of egress facilities, stability, access to persons with disabilities, sanitation, adequate light and ventilation and energy conservation; safety to life and property from fire and other hazards attributed to the built environment; and to provide safety to firefighters and emergency responders during emergency operations.

18.04.030 Scope.

A. The provisions of this Title shall apply to the site preparation and the construction, alteration, moving, demolition, repair, maintenance, or use of any building or structure within the City, except work located primarily in a public way other than pedestrian protection structures required by Chapter 32 of the California Building Code, public utility, towers and poles, mechanical equipment not specifically regulated in this Title, and hydraulic flood control structures.

B. Additions, alterations, repairs and changes of use or occupancy in all buildings and structures shall comply with the provisions for new buildings and structures except as otherwise specifically provided in Chapter 34 of the California Building Code.

C. Where, in any specific case, different chapters of this Title specify different materials, methods of construction or other requirements, the most restrictive shall govern. Where there is a conflict between a general requirement and a specific requirement, the specific requirement shall be applicable.

D. The provisions of the Uniform Housing Code, as adopted and amended in this Title, shall apply to all existing buildings or portions thereof used, or designed or intended to be used, for human habitation.

E. Wherever in this Title reference is made to the appendix, the provisions in the appendix shall not apply unless specifically adopted.

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18.04.040 Violations.

A. General. No person shall construct, alter, repair, demolish, remove, move, use, occupy or maintain, within the City, any building or structure or any portion thereof, except as provided by this Title.

No person shall grade, excavate or fill any land except as provided by this Title.

The permissive provisions of this Title shall not be presumed to waive any limitations imposed by other statutes or ordinances of the State or City.

All the provisions of this Title shall be limitations for safeguarding life, limb, health, property and public welfare.

If two or more pertinent limitations are not identical, those limitations shall prevail which provide the greater safety to life or limb, health, property or public welfare.

B. Violation of a building or grading permit. Every person who knowingly and willfully procures a building and/or grading permit without the consent of the owner of record of the property for which the permit is issued, or such person's agent, may be guilty of a misdemeanor.

EXCEPTION: This Section shall not apply to building and/or grading permits obtained pursuant to and in compliance with an order of a court of law or a governmental agency.

C. Violation of an order. No person shall fail to comply with any valid order issued pursuant to any provision or requirement of this Title.

For the purposes of this Section, a "person authorized by the department to perform inspections" is any person who is a registered special inspector, a structural inspector, a certified welder or a certified licensed contractor. The term "writing" shall include, but is not limited to, forms, applications, approvals, reports or certifications required by the

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department. Every violation of this Section may be punishable as a misdemeanor.

18.04.060 Applicability to existing buildings—Responsibility for maintenance.

A. All buildings and structures, both existing and new, and all parts thereof, shall be maintained in a safe and sanitary condition. All devices or safeguards which are required by this Title shall be maintained in conformance with the code requirements under which installed. To determine compliance with this Section, the Building Official may cause any structure to be reinspected.

B. Every owner remains liable for violations of duties imposed upon him or her by this Title even though an obligation is also imposed on the occupants of his or her building, and even though the owner has, by agreement, imposed on the occupant the duty of furnishing required equipment or of complying with this Title.

C. Every owner, or his or her agent, in addition to being responsible for maintaining his or her building in a sound structural condition, shall be responsible for keeping that part of the building or premises which he or she occupies or controls in a clean, sanitary and safe condition including the shared or public areas in a building containing two or more dwellings.

18.04.070 Applicability to existing buildings—Moved buildings and temporary buildings.

A. Buildings or structures moved into or within the jurisdiction shall comply with the provisions of this Title for new buildings or structures.

B. Exception. Apartment houses and dwellings shall be allowed the retention of existing materials and methods of construction so long as the apartment house or dwelling complies with the rules and regulations of

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the California housing and community development commission, complies with the standards for foundations applicable to new construction, and does not become or continue to be a substandard building.

C. Temporary structures such as reviewing stands and other miscellaneous structures, sheds, canopies or fences used for the protection of the public around and in conjunction with construction work may be erected by special permit from the Building Official for a limited period of time. Such buildings or structures need not comply with the type of construction or fire resistive time periods required by this Title. Temporary buildings or structures shall be completely removed upon the expiration of the time limit stated in the permit.

18.04.090 Alternate materials, design and methods of construction and equipment.

A. General. The provisions of this Title are not intended to prevent the installation of any materials or to prohibit any design or method of construction not specifically prescribed by this Title provided that any such alternative has been approved and its use authorized by the Building Official. An alternative material, design or method of construction may be approved where the Building Official finds that the proposed design is satisfactory and complies with the intent of the provisions of this Title, and that the material, method or work offered is, for the purpose intended, at least the equivalent of that prescribed in this Title in quality, strength, effectiveness, fire resistance, durability and safety. The Building Official shall require that sufficient evidence or proof be submitted to substantiate any claims that may be made regarding its use.

B. Research reports. Supporting data, where necessary to assist in the approval of materials or assemblies not specifically provided for in this Title, shall consist of valid research reports from approved

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sources and its use authorized by the Building Official.

C. Test. Whenever there is insufficient evidence of compliance with any of the provisions of this Title, or evidence that any material or construction method does not conform to the requirements of this Title, or in order to substantiate claims for alternative materials or methods, the Building Official may require tests as proof evidence of compliance to be made at no expense to the City. Test methods shall be as specified by this Title or by other recognized test standards. If there are no recognized and accepted test methods for the proposed alternate, the Building Official shall determine test procedures. All tests shall be made by an approved agency. Reports of such tests shall be retained by the Building Official for the period of not less than two years after the acceptance of the structure.

D. Fee. A written application shall be submitted together with a filing fee as set forth in the schedule of fees and charges established by City Council resolution. An additional fee as set forth in the schedule of fees and charges established by City Council resolution per hour or fraction thereof shall be charged when actual staff review time exceeds one hour. The requirement for application and fees and charges may be waived by the Building Official for materials, products or methods which have been evaluated and listed by the International Code Council, the national research board, or other recognized agency.

E. Expiration. The rights and privileges granted by the Building Official shall be voided if the permit is not secured within twelve (12) months of the date the approval was granted or if the permit expires under any of the conditions specified in Section 18.12.100.

EXCEPTION: The Building Official may grant extensions of time if a permit applicant submits in writing substantial evidence that unusual conditions or circumstances precluded the securing of the permit within

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the allocated time or caused the permit to expire.

18.04.100 Granting of modifications.

A. General. Whenever there are practical difficulties involved in carrying out the provisions of this Title, the Building Official may grant modifications for individual cases, upon the application of the owner or owner's representative, provided the Building Official shall first find that a special individual reason makes the strict letter of this Title impractical and the modification is in compliance with the intent and purpose of this Title and that such modification does not lessen health, accessibility, life and fire safety, or structural requirements. The details of action granting modifications shall be recorded and entered in the files of the department.

B. Fee. A written application shall be submitted together with a filing fee as set forth in the schedule of fees and charges established by City Council resolution. An additional fee as set forth in the schedule of fees and charges established by City Council resolution per hour or fraction thereof shall be charged when staff review time exceeds one hour.

C. Expiration. The rights and privileges granted by the Building Official shall be voided if the permit is not secured within twelve (12) months of the date the approval was granted or if the permit expires under any of the conditions specified in Section 18.12.100.

EXCEPTION: The Building Official may grant extensions of time if a permit applicant submits in writing substantial evidence that unusual condition or circumstances precluded the securing of the permit within the allocated time or caused the permit to expire.

Section 2. Chapter 18.08 of the Long Beach Municipal Code is amended in its entirety and restated to read as follows:

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CHAPTER 18.08

DEFINITIONS

18.08.010 Interpretation.

For the purposes of this Title, certain abbreviations, terms, phrases, words and their derivatives shall be construed as specified in this Chapter. Words used in the singular include the plural and the plural the singular. Words used in the masculine gender include the feminine, and the feminine the masculine.

18.08.020 A definitions.

"Approved fabricator" means an established and qualified person, firm or corporation approved by the Building Official, pursuant to Chapters 18.12, 18.16 of this Title, and Section 1704.2 of the California Building Code.

18.08.030 B definitions.

"Building Official" means the Superintendent of Building and Safety for the City of Long Beach Department of Planning and Building as designated in Section 18.20.020.

18.08.040 C definitions.

"California Building Code" or "CBC" means the code adopted by Section 18.24.010.

"Chief" means the Fire Chief of the City of Long Beach or designee.

"City" means the City of Long Beach, California.

8.08.050 D definitions.

"Dangerous building" means any building or structure which has any or all of the conditions or defects hereinafter described, provided that such conditions or defects exist to the extent that life, health, property, or safety of the public or its occupants are endangered or persons in the vicinity thereof:

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1. Whenever any door, aisle, passageway, stairway or other means of exit is not of sufficient width or size, or is not so arranged as to provide safe and adequate means of exit in case of fire or panic;

2. Whenever the stress in any materials, member or portion thereof, due to all dead and live loads, is more than one and one-half times the working stress or stresses allowed in this Title for new buildings of similar structure, purpose or location;

3. Whenever any portion thereof has been damaged by fire, earthquake, wind, flood, or by any other cause, to such an extent that the structural strength or stability thereof is materially less than it was before such catastrophe and is less than the minimum requirements of this Title for new buildings of similar structure, purpose or location;

4. Whenever any portion or member or appurtenance thereof is likely to fail, or to become detached or dislodged, or to collapse and thereby injure persons or damage property;

5. Whenever any portion of a building, or any member, appurtenance or ornamentation on the exterior thereof is not of sufficient strength or stability, or is not so anchored, attached or fastened in place so as to be capable of resisting a wind pressure of one-half of that specified in this Title for new buildings of similar structure, purpose or location without exceeding the working stresses permitted in this Title for such buildings;

6. Whenever any portion thereof has wracked, warped, buckled or settled to such an extent that walls or other structural portions have materially less resistance to winds or earthquakes than is required in the case of similar new construction;

7. Whenever the building or structure, or any portion thereof, because of: (a) dilapidation, deterioration, or decay; (b) faulty construction;

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(c) the removal, movement or instability of any portion of the ground necessary for the purpose of supporting such building; (d) the deterioration, decay or inadequacy of its foundation; or (e) any other cause, is likely to partially or completely collapse;

8. Whenever, for any reason, the building or structure, or any portion thereof, is manifestly unsafe for the purpose for which it is being used;

9. Whenever the exterior walls or other vertical members list, lean or buckle to such an extent that a plumb line passing through the center of gravity does not fall inside the middle one-third of the base;

10. Whenever the building or structure, exclusive of the foundation, shows thirty-three percent (33%) or more damage or deterioration of its supporting member or members, or fifty percent (50%) damage or deterioration of its nonsupporting members, enclosing or outside walls, or coverings;

11. Whenever the building or structure has been so damaged by fire, wind, earthquake or flood, or has become so dilapidated or deteriorated as to become: (a) an attractive nuisance to children; (b) a harbor for vagrants, criminals or immoral persons; or (c) as to enable persons to resort thereto for the purpose of committing unlawful or immoral acts;

12. Whenever any building or structure has been constructed, exists or is maintained in violation of any specific requirement or prohibition applicable to such building or structure provided by this Title;

13. Whenever any building or structure which, whether or not erected in accordance with all applicable laws and ordinances, has in any nonsupporting part, member or portion less than fifty percent (50%), or in any supporting part, member or portion less than sixty six percent (66%)

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of the: (a) strength; (b) fire resisting qualities or characteristics; or (c) weather resisting qualities or characteristics required by law in the case of a newly constructed building of like area, height and occupancy in the same location;

14. Whenever a building or structure, used or intended to be used for dwelling purposes, because of inadequate maintenance, dilapidations, decay, damage, faulty construction or arrangement, inadequate light, air or sanitation facilities, or otherwise, is determined by the City Health Officer to be unsanitary, unfit for human habitation or in such a condition that is likely to cause sickness or disease;

15. Whenever any building or structure, because of obsolescence, dilapidated condition, deterioration, damage, inadequate exits, lack of sufficient fire resistive construction, faulty electric wiring, gas connections or heating apparatus, or other cause, is determined by the chief of the fire department to be a fire hazard;

16. Whenever any building or structure is in such a condition as to constitute a public nuisance under common law or equity jurisprudence;

17. Whenever any portion of a building or structure remains on a site after the demolition or destruction of the building or structure or whenever any building or structure is abandoned for a period in excess of six (6) months so as to constitute such building or portion thereof an attractive nuisance or hazard to the public.

"Department" means the Department of Planning and Building.

18.08.070 F definitions.

"Fire code" is Chapter 18.48 of this code.

"Foundation-Only Permit" is a building permit issued for that portion of a building which constitutes the footings for the building and which may, subject to the approval of the Building Official, include those portions of

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the building below the grade level.

18.08.080 G definitions.

"Grading" means any soil excavation or fill or any combination thereof and shall include the conditions resulting from any soil excavation or fill.

18.08.090 H definitions. (Reserved)

18.08.100 I definitions.

"International Building Code" or "IBC" means the code incorporated into the California Building Code adopted by Section 18.24.010.

18.08.110 J definitions. (Reserved)

18.08.120 K definitions. (Reserved)

18.08.130 L definitions. (Reserved)

18.08.140 M definitions.

"Mechanical code" is the provisions set forth in Chapter 18.36 of this code.

18.08.150 N definitions.

"Nuisance" means:

1. Any public nuisance known at common law or in equity jurisprudence or as declared by ordinance;

2. Any attractive nuisance which may prove detrimental to children whether in a building, on the premises of a building, or upon an unoccupied lot; this includes any abandoned structure, basement or excavation; any structurally unsound fence or structure; any lumber, trash, fence, debris or vegetation which may prove a hazard for inquisitive minors;

3. Whatever is dangerous to human life or is detrimental to health;

4. Overcrowding a room with occupants;

5. Insufficient ventilation or illumination;

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6. Inadequate or unsanitary sewage or plumbing facilities;

7. Uncleanliness, when so determined by the health officer;

8. Whatever renders air, food or drink unwholesome or detrimental to the health of human beings when so determined by the health officer;

9. Dangerous or substandard buildings or conditions as defined in this Title.

18.08.160 O definitions.

"Occupancy certificate" or "certificate of occupancy" means the certificate issued by the Building Official when, after final inspection, it is found that a building or structure complies with all requirements of this Title. When used with reference to a building or structure which was constructed and occupied prior to the effective date of any provisions requiring such a certificate, it shall mean the right to occupy such building or structure.

"Occupancy" means the purpose for which a building, or part of a building, is used or intended to be used. The term "Occupancy" as used in this Title shall include the room housing that occupancy and the space immediately above a roof or structure if used or intended to be used for other than a shelter.

18.08.170 P definitions.

"Plumbing code" is Chapter 18.40 of this code.

18.08.180 Q definitions. (Reserved)

18.08.190 R definitions. (Reserved)

18.08.200 S definitions.

"Substandard building" means any building or other structure, or the premises on which the same is located, where any of the following conditions exist to an extent which, in the opinion of the Building Official,

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endangers the life, limb, health, property, safety or welfare of the occupants thereof, or of the public:

1. Inadequate sanitation. Inadequate sanitation shall include, but not be limited to, the following:

a. Lack of or improper water closet, lavatory, bathtub or shower in a dwelling unit;

b. Lack of or improper water closets, lavatories and bathtubs or showers per number of guests in a hotel;

c. Lack of or improper kitchen sink;

d. Lack of hot and cold running water to plumbing fixtures in a hotel;

e. Lack of hot and cold running water to plumbing fixtures in a dwelling unit;

f. Lack of adequate heating;

g. Lack of, or improper operation of, required ventilating equipment;

h. Lack of minimum amounts of natural light and ventilation required by this code;

i. Room and space dimensions less than required by this code;

j. Lack of required electrical lighting;

k. Dampness of habitable rooms;

l. Infestation of insects, vermin or rodents as determined by the health officer;

m. General dilapidation or improper maintenance;

n. Lack of connection to required sewage disposal system;

o. Lack of adequate garbage and rubbish storage and removal facilities as determined by the Health Officer.

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2. Structural hazards. Structural hazards shall include, but not be limited to, the following:

a. Deteriorated or inadequate foundations;

b. Defective or deteriorated flooring or floor supports;

c. Flooring or floor supports of insufficient size to carry imposed loads with safety;

d. Members of walls, partitions or other vertical supports that split, lean, list or buckle due to defective material or deterioration;

e. Members of walls, partitions or other vertical supports that are of insufficient size to carry imposed loads with safety;

f. Members of ceilings, roofs, ceiling and roof supports, or other horizontal members which sag, split or buckle due to defective material or deterioration;

g. Members of ceilings, roofs, ceiling and roof supports, or other horizontal members that are of insufficient size to carry imposed loads with safety;

h. Fireplaces or chimneys which list, bulge or settle due to defective material or deterioration;

i. Fireplaces or chimneys which are of insufficient size or strength to carry imposed loads with safety.

3. Nuisance. Any “nuisance” as defined in this Title.

4. Hazardous Wiring. All wiring except that which conformed with all applicable laws in effect at the time of installation if it is currently in good and safe condition and working properly.

5. Hazardous Plumbing. All plumbing except that which conformed with all applicable laws in effect at the time of installation and which has been maintained in good condition or which may not have conformed with all applicable laws in effect at the time of installation but is

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currently in good and safe condition and working properly and which is free of cross connections and siphonage between fixtures.

6. Hazardous Mechanical Equipment. All mechanical equipment, including vents, except that which conformed with all applicable laws in effect at the time of installation and which has been maintained in good and safe condition, or which may not have conformed with all applicable laws in effect at the time of installation but is currently in good and safe condition and working properly.

7. Faulty weather protection, which shall include, but not be limited to, the following:

a. Deteriorated, crumbling or loose plaster;

b. Deteriorated or ineffective water proofing of exterior walls, roof, foundations or floors, including broken windows or doors;

c. Defective or lack of weather protection for exterior wall coverings, including lack of paint, or weathering due to lack of paint or other approved protective covering;

d. Broken, rotted, split or buckled exterior wall coverings or roof coverings.

8. Fire Hazard. Any building or portion thereof, device, apparatus, equipment, combustible waste or vegetation which, in the opinion of the Chief of the Fire Department or his or her deputy, is in such a condition as to cause a fire or explosion or provide a ready fuel to augment the spread and intensity of fire or explosion arising from any cause.

9. Faulty Materials of Construction. All materials of construction except those which are specifically allowed or approved by this Title, and which have been adequately maintained in good and safe condition.

10. Hazardous or Unsanitary Premises. Those premises on

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which an accumulation of weeds, vegetation, junk, dead organic matter, debris, garbage, offal, rat harborages, stagnant water, combustible materials and similar materials or conditions constitute fire, health or safety hazards.

11. Inadequate Maintenance. Any building or portion thereof which is determined to be dangerous as defined in Section 18.08.050.

12. Inadequate Exits. All buildings or portions thereof not provided with adequate exit facilities as required by this Title except those buildings or portions thereof whose exit facilities conformed with all applicable laws at the time of their construction and which have been adequately maintained and increased in relation to any increase in occupant load, alteration or addition, or any change in occupancy.

When an unsafe condition exists through lack of or improper location of exits, additional exits may be required to be installed.

13. Inadequate Fire Protection or Firefighting Equipment. All buildings or portions thereof which are not provided with the fire resistive construction or fire extinguishing systems, or equipment required by this Title, except those buildings or portions thereof which conformed with all applicable laws at the time of their construction and whose fire resistive integrity and fire extinguishing systems or equipment have been adequately maintained and improved in relation to any increase in occupant load, alteration or addition, or any change in occupancy.

14. Improper Occupancy. All buildings or portions thereof occupied for living, sleeping, cooking or dining purposes which are not designed or intended to be used for such occupancies.

15. Inadequate structural resistance to horizontal forces.

18.08.210 T definitions. (Reserved)

18.08.220 U definitions. (Reserved)

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18.08.230 V definitions.

"Value" or "valuation" of a building shall be the estimated cost to replace the building in kind, based on current replacement costs, as determined in Chapters 18.12 and 18.16.

18.08.240 W definitions. (Reserved)

18.08.250 X definitions. (Reserved)

18.08.260 Y definitions. (Reserved)

18.08-270 Z definitions. (Reserved)

Section 3. Chapter 18.12 of the Long Beach Municipal Code is amended in its entirety and restated to read as follows:

CHAPTER 18.12

PERMITS

18.12.010 Permits required.

A. Building permits. No person shall erect, construct, enlarge, alter, repair, remodel, move, remove, improve, convert or demolish any building or part of a building or structure, or change the character or occupancy or use of any building or structure, or part of a building or structure, or perform site grading in the City without first obtaining a permit covering such work from the Building Official.

B. Grading permits. No person shall commence or perform any grading, and no person shall import or export any earth materials to or from any grading site, without first having obtained a permit therefor from the department. Any grading project involving more than one hundred (100) cubic yards of excavation and involving an excavation in excess of five (5) feet in vertical depth at its deepest point measured from the original ground surface shall be done by a State of California licensed contractor who is licensed to perform the work described herein. A

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separate permit shall be required for each grading site. One permit may include the entire grading operation at that site, however.

EXCEPTION: All other provisions of this Title shall apply, but a grading permit will not be required if the work complies with any one of the following conditions:

1. An excavation which (a) is less than two (2) feet in depth, or (b) which does not create a cut slope greater than five (5) feet in height and steeper than 1 unit vertical in 2 units horizontal (50% slope). This exception shall not apply to cut which exceeds 50 cubic yards or which changes the existing drainage pattern.

2. A fill less than one (1) foot in depth and placed on natural terrain with a slope flatter than one (1) unit vertical in 10 units horizontal (10% slope). This exception shall not apply when the fill exceeds fifty (50) cubic yards or when the fill changes the existing drainage pattern.

3. Excavations for caissons or piles under buildings or structures authorized by valid building permits.

4. Excavations for basements, footings, caissons, piles, swimming pools or underground structures that are authorized by valid building permits.

5. Excavations for wells or tunnels or utilities, which do not provide vertical or lateral support for buildings, or adversely impact the safety or stability of private or public properties.

6. Excavation in an isolated, self-contained area if the department finds that by reason of such isolation and self-containment no danger to private or public property can now or thereafter result from grading operations.

7. As exempted in Section J103.2 of Appendix J of the 2007 California Building Code.

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C. Subwork permits. Separate permits also must be obtained for plumbing, mechanical, electrical, signs and billboards, and house moving. In cases where only plumbing, mechanical, electrical or sign work is involved, separate subpermits as provided in this Title shall be obtained, and no other building permit is required unless there is a change of occupancy or use as defined in this Chapter and Chapters 18.08 and 18.16.

EXCEPTION. A single combined permit may be issued for the construction of any building or structure of a Group R-3 or Group U occupancies, or additions or alterations thereto, which includes all building, electrical, plumbing, heating, ventilating and air conditioning work.

No person shall hang, suspend or otherwise affix any sign, street banner, pole banner, flag, pennant or street decoration on any street light pole, traffic signal pole or over and above any street unless a permit to do so is first obtained from the City Manager. Permits issued pursuant to this Section shall be in accordance with the provisions of Chapter 16.55 of this code, the City's policy on City sponsorship, corporate recognition and advertising, as adopted on July 23, 1996, as amended from time to time, and any guidelines that may from time to time be approved by the City Council.

EXCEPTION. The above provisions shall not apply to any sign or advertising matter lettered upon the surface of any awning, provided the awning is securely attached to a building and is not less than seven feet above the sidewalk level immediately below.

D. Other permits. Other permits must be obtained as required pursuant to various applicable ordinances of the City.

E. Unpermitted structure. No person shall own, use, occupy or

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maintain any "unpermitted structure." For the purpose of this Title, "unpermitted structure" shall be defined as any structure, or portion thereof, that was erected, constructed, enlarged, altered, repaired, remodeled, moved, removed, improved, converted or demolished at any point in time, without the required permit(s) having first been obtained from the Building Official, pursuant to Subsection A of this Section.

F. Exceptions. Exemption from the permit requirements of this Title shall not be deemed to grant authorization for any work to be done in any manner in violation of the provisions of this Title or any other laws or ordinances of this City. Permits are not required for the following:

1. Neither building nor subpermits of this Title are required for the following:

a. Buildings or structures placed in public streets, alleys and sidewalks, except those regulated by Chapter 32 of the California Building Code;

b. Buildings or structures under the auspices of and owned and controlled by the Federal government, the State of California, the County of Los Angeles, or by a public school district;

c. Work done by employees of the City on City owned or leased buildings;

d. A temporary shed, office or storage building and other structure incidental to and for work authorized by a valid grading or building permit. Such structures must be removed upon expiration of the permit or completion of work covered by the permit.

2. Except for work undertaken to correct conditions determined to be substandard or a nuisance under the provisions of Chapter 18.20, building permits are not required for any of the following:

a. Retaining walls or planter boxes not more than four (4) feet

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in height, measured from the bottom of the footing to the top of the wall, unless supporting a surcharge or sloping earth, or impounding flammable liquids. This exemption shall not apply to retaining walls of any height built on slopes steeper than one (1) unit vertical in five (5) units horizontal (20% slope).

b. Fences four (4) feet or less in height above grade.

c. Unroofed platforms, walks, driveways and decks not more than thirty (30) inches above grade and not over any basement or story below and not part of a required accessible route.

d. Application of hot or cold paint or other roof coating on a roof of a building.

e. Application of roofing not in excess of five hundred (500) square feet on an existing building within any twelve (12) month period.

f. Installation of ceramic tile on floor or countertops and on walls less than forty-eight inches (48") in height.

g. Replacement of broken or damaged ceramic tile in an existing installation.

h. Plaster patching not in excess of ten (10) square yards of interior or exterior plaster.

i. Swimming, bathing and wading pools not over two (2) feet in depth and not having a surface area exceeding two hundred and fifty (250) square feet, where there is no electrical or plumbing installation.

j. Veneer less than four (4) feet in height.

k. Window awnings supported by an exterior wall of Group R-3 and Group U occupancies when projecting not more than fifty-four (54) inches.

l. A detached equipment shed, utility building, or children's playhouse or treehouse provided that the building is accessory to a

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dwelling unit; it does not exceed sixty-four (64) square feet in area nor eight (8) feet in height from floor to roof; it contains no plumbing, electrical, or mechanical installations regulated by this code; and is not in violation of Title 21 zoning regulations.

m. Temporary motion picture, television and theater stage sets and scenery that are not supported by any building.

n. Gantry cranes, drill presses, and other similar manufactured machinery or equipment.

o. Water tanks supported on a foundation at grade if the capacity does not exceed five thousand (5,000) gallons (18,927 L) and the ratio of the height to diameter or width does not exceed two (2) to one (1).

p. Painting, papering, tiling, carpeting, cabinets, counter tops and similar finish work and are not required to comply with accessibility regulations.

q. Nonfixed and movable fixtures, cases, racks, counters and partitions not over five (5) feet nine (9) inches in height.

r. Prefabricated swimming pools accessory to a Group R-3 occupancy in which the pool walls are entirely above the adjacent grade if the capacity does not exceed five thousand (5,000) gallons (18,927 L); it contains no plumbing, electrical, or mechanical installations regulated by this Title; and is not in violation of Title 21 zoning regulations.

s. Swings and other playground equipment accessory to detached one- and two-family dwellings.

t. Exhibits, booths, partitions and display counters for temporary use not exceeding thirty (30) days in conjunction with an exhibit or show and not exceeding twelve (12) feet in height above the floor.

u. Waterproof pointing of joints in masonry or veneer, also cleaning with detergents which are not injurious to clothing or skin of

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persons and are not removed by liquid washing, provided work is done from safely enclosed scaffolding which will collect any dust, debris or dropped tools and materials in use.

v. Portable amusement devices and structures, including merry-go-rounds, ferris wheels, rotating conveyances, slides, similar devices, and portable accessory structures whose use is necessary for the operation of such amusement devices and structures; any portable accessory structure included in the provisions of this Chapter shall be limited to a cover or roof over each device, but shall not include any storage building or detached structure which is not an integral part of the device; and provided however, that any electrical installations shall require subwork permits where applicable and be regulated by this Title.

w. Nothing in this code shall apply to any excavation, removal, fill or deposit of any earth or other materials from individual interment sites, underground crypts or burial vaults within a property which is dedicated or used for cemetery purposes, provided that such work does not affect the lateral support or increase the stresses in or pressure upon any adjacent or contiguous property not owned by the cemetery authority.

x. Any portable metal hangar less than two thousand (2,000) square feet in size, located on a City-owned airport, used for the parking of aircraft only, and bearing evidence of approval by the Department of Motor Vehicles of the State of California for movement on any highway. Such structure shall, as an integral part of its basic construction, be equipped with a hitch or coupling device for towing. It shall accommodate, without further major structural change, wheel and axle assemblies which will provide such structure with a safe means of portability. No water or sanitary facilities shall be permitted in such structure and it shall be equipped with permanent ventilation as required for Group S-2 occupancy;

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and is not in violation of Title 21 zoning regulations.

y. Signs that are exempt under the provision of Section 21.44.070.

z. Signs that are exempt under the provision of Section H101.2 of Appendix H of the California Building Code.

aa. Outdoor tents or cloth structures for temporary use not exceeding one hundred and eighty (180) days, provided such tents are accessory to an indoor or outdoor assembly use on the site; and is not in violation of Title 9 public peace, morals and welfare, Title 21 zoning regulations and Chapter 18.48 fire code.

bb. Shade cloth structures constructed for nursery or agricultural purposes, not including service system.

cc. Towers or poles supporting public utility communication lines, antennas, or power transmission lines.

18.12.020 Application.

A. Any person desiring a permit as required by this Chapter shall file with the Building Official an application therefor, on a form to be furnished by the building and safety bureau for such purpose. Every application for a permit shall contain a sworn statement as to the following facts:

1. A brief description of the work to be covered by the permit for which the application is made;

2. A brief description of the land upon which the proposed building work is to be located or done by legal description, street address or similar description that will readily identify and definitely locate the proposed building or work;

3. A statement of the proposed use or occupancy of all parts of the building proposed to be erected or upon which such work is to be

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done;

4. A statement of the height and area of any building to be erected;

5. An accurate plot plan of the lot, or parcel, showing street, or streets, and alley, and the location of the building on the lot, or parcel, drawn to scale and fully dimensioned;

6. A statement of the valuation of any new building or structure or any addition, remodeling or alteration to an existing building;

7. Be accompanied by plans, diagrams, computations and specifications and other data as required by this Title;

8. Be signed by the applicant, or the applicant's authorized agent;

9. Such other reasonable information as may be required by the Building Official.

B. No person shall withhold from or misrepresent to the Building Official any information he may reasonably request relative to any proposed work for which an application for a building permit has been filed.

18.12.030 Requirement of permittee.

Permits as required by this Chapter shall be issued only to duly licensed contractors acting in compliance with the provisions of the business license regulations set forth in Title 5 of this code.

EXCEPTIONS:

1. A permit may be issued to an owner for the construction, alteration or repair of a single-family or a two-family dwelling and accessory building, structure, or facilities thereto provided the owner occupies or intends to occupy one of the units.

2. An owner may obtain building permits but not combined

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permits for additions, alterations and repairs for other structures, provided that the cost of such additions, alterations and repairs does not exceed ten percent (10%) of the valuation of the building or structure in any twelve (12) month period.

3. A permit may be issued to or work may be performed by any responsible person not acting in violation of Chapter 9, division 3, of the Business and Professions Code of the state of California.

18.12.050 Construction documents.

A. Submittal documents. Construction documents, special inspections and other data shall be submitted with each application for a permit. In accordance with Section 18.12.051, the Building Official may require construction documents to be prepared by a registered design professional licensed by the state of California to practice as such. Construction documents shall include construction inspection requirements as defined in Section 18.12.052.

EXCEPTION: The Building Official may waive the submission of construction documents and other data not required to be prepared by a registered design professional if it is found that the nature of the work applied for is such that the review of construction documents is not necessary to obtain compliance with this Title.

B. Site plan. The construction documents submitted with the application for a permit shall be accompanied by a site plan showing to scale the size and location of new construction and existing structures on the site, show the boundaries, distances from lot lines, the established street grades and the proposed finished grades, neighboring public ways, sufficient dimensions and other data and, as applicable, flood hazard areas, floodways, and design flood elevations; and it shall be drawn in accordance with an accurate boundary line survey. In the case of

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demolition, the site plan shall show construction to be demolished and the location and size of existing structures and construction that are to remain on the site or plot. The Building Official is authorized to waive or modify the requirement for a site plan when the application for permit is for alteration or repair or when otherwise warranted.

EXCEPTION: The Building Official may grant the omission of a site plan when the proposed work is of such a nature that no information is needed to determine compliance with all laws relating to the location of buildings or occupancies.

C. Number of sets of construction documents. Each application for a permit shall be accompanied by two sets of construction documents for plan checking.

EXCEPTION: The Building Official may waive the requirement for construction documents as required in this Title if the Building Official finds that the information on the application is sufficient to show that the work will conform to the provisions of this Title and other relevant laws.

D. Deferred submittals. For the purposes of this Section, deferred submittals are defined as those portions of the design which are not submitted at the time of the application and which are to be submitted to the Building Official within a specified period.

Deferral of any submittal items shall have prior approval of the Building Official. The registered design professional in responsible charge shall list the deferred submittals on the construction documents for review by the Building Official.

Documents for deferred submittal items shall be submitted to the registered design professional in responsible charge who shall review them and forward them to the Building Official with a notation indicating that the deferred submittal documents have been reviewed and been

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found to be in general conformance with the design of the building. The deferred submittal items shall not be installed until the design and submittal documents have been approved by the Building Official.

18.12.051 Information and certification required on construction documents.

A. Information required. Construction documents shall be dimensioned and drawn with ink or indelible pencil upon suitable material, or shall be made by a reproduction process approved by the Building Official. Electronic media documents may be permitted to be submitted when approved by the Building Official. The first sheet of each set of construction documents shall give the street address of the work and the name and address of the owner of the building.

Construction documents shall be of sufficient clarity to indicate the location, nature and extent of the work proposed and show in detail that it will conform to the provisions of this code and relevant laws, ordinances, rules and regulations, as determined by the Building Official.

Construction documents for buildings of other than Group R-3 and U occupancies shall indicate how required structural and fire resistive integrity will be maintained where a penetration will be made for electrical, mechanical, plumbing and communication conduits, pipes and similar systems.

In lieu of detailed specifications, the department may approve reference on the construction documents to a specific section, subsection or paragraph of this Title or other ordinance or law.

Distances and dimensions on the construction documents, when required to show conformity with the provisions of this Title, shall be done in figures.

The construction documents shall show in sufficient detail the

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location, construction, size and character of all portions of the means of egress in compliance with the provisions of this Title. In other than occupancies in Groups R-2, R-3, and I-1, the construction documents shall designate the number of occupants to be accommodated on every floor, and in all rooms and spaces.

Construction documents for all buildings shall describe the exterior wall envelope in sufficient detail to determine compliance with this Title. The construction documents shall provided details of the exterior wall envelope as required, including flashing, intersections with dissimilar materials, corners, end details, control joints, intersections at roof, eaves or parapets, means of drainage, water-resistive membrane and details around openings.

The construction documents shall include manufacturer's installation instructions that provide supporting documentation that the proposed penetration and opening details described in the construction documents maintain the weather resistance of the exterior wall envelope. The supporting documentation shall fully describe the exterior wall system which was tested, where applicable, as well as the test procedure used.

When required by Section 1704.1.1 of the California Building Code, a statement of special inspection prepared by the registered design professional in responsible charge of the project shall be included with the construction documents.

The construction documents shall show all mitigation measures required under the National Pollutant Discharge Elimination System (NPDES) permit issued to the City of Long Beach. For the application of the NPDES requirements, see Chapter 18.95 of this Title.

B. Written records of computations required. When a structural design is required for the purpose of obtaining a permit, it shall be justified

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by a written record of computations filed with the department and each sheet of the drawings and written record of computations shall be signed by or bear the approved stamp of a registered design professional licensed by the State of California for the type of service performed. On structures which do not require a registered design professional's signatures according to Article 3, Chapter 7, Division 3, of the California Business and Profession's Code but do require some structural design, the person responsible for such design shall sign the calculations and the sheets of the construction documents having engineering details thereon.

C. Grading construction documents. Application for a grading permit shall be accompanied by construction documents prepared and signed by an individual licensed by the state to prepare such documents.

The first sheet of each set of grading construction documents shall give location of the work, the name and address of the owner and the person by whom they were prepared.

The grading construction documents shall include, but not be limited to, the following information:

1. General vicinity of the proposed site.

2. Property limits and accurate contours of existing ground and details of terrain and area drainage.

3. Limiting dimensions, elevations or finish contours to be achieved by the grading, and proposed drainage channels and related construction.

4. Detailed plans of all surface and subsurface drainage devices, walls, cribbing, dams and other protective devices to be constructed with, or as a part of, the proposed work together with a map showing the drainage area and the estimated runoff of the area served by any drains.

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5. Location of any buildings or structures on the property where the work is to be performed and the location of any buildings or structures on land of adjacent owners which are within fifteen (15) feet of the property or which may be affected by the proposed grading operations.

6. The location of the top and toe of all cuts and fills, the location of all "daylight" lines, the amount of cut and fill, the location of disposal site for excess material, if known, and the estimated dates for starting and completing grading work.

7. When reports are required pursuant to Section 18.12.140.F or Section J104.3 of Appendix J of the 2007 California Building Code, recommendations included in the approved soils engineering report and engineering geology report shall be incorporated into the grading construction documents. A copy of the soils report and geological report shall be attached to the approved set of grading construction documents and kept at the job site.

8. When reports are required pursuant to Section 18.12.140.F or Section J104.3 of Appendix J of the 2007 California Building Code, the dates of the soils engineering and engineering geology reports together with the names, addresses and phone numbers of the firms or individuals who prepared the reports shall be incorporated into the grading plans.

The department may require some plans to be prepared by a licensed surveyor when the property location and its limits are not clear. Portions of the aforementioned plan requirements may be waived by the department if it finds that the information on the application and/or submitted plans is sufficient to show that the work will conform to the provisions of this code and other relevant laws.

The Building Official may require that grading operations and project designs be modified if delays occur which incur weather-generated

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problems not considered at the time the permit was issued.

The Building Official may require professional inspection and testing by the soils engineer. When the Building Official has cause to believe that geologic factors may be involved, the grading will be required to conform to engineering grading.

D. Yard restriction. The increase in area permitted by Sections 506 and 507 of the California Building Code shall not be allowed unless or until the owner of the required yard shall file with the department an agreement binding such owner, heirs and assignees, to set aside the required yard as an unobstructed space having no improvements. Such agreement shall be recorded in the Los Angeles County Recorder's Office.

18.12.052 Special inspection.

A. When special inspection is required by Section 18.16.060, the registered design professional in responsible charge shall prepare an inspection program which shall be submitted to the Building Official for approval prior to issuance of the building permit. The inspection program shall designate the portions of the work that require special inspection and the name or names of the individuals or firms who are to perform the special inspections, and indicate the duties of the special inspectors.

B. The special inspector shall be employed by the owner, registered design professional in responsible charge, or an agent of the owner, but not the contractor or any other person responsible for the work.

C. When structural observation is required by Section 1709 of the California Building Code, the inspection program shall name the individuals or firms who are to perform structural observation and describe the stages of construction at which structural observation is to occur.

D. The inspection program shall include samples of inspection reports and provide time limits for submission of reports.

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18.12.055 Registered design professional in responsible charge.

A. When it is required that documents be prepared by a registered design professional licensed in the State of California, the Building Official may require the owner to engage and designate on the building permit application a registered design professional who shall act as the a registered design professional in responsible charge. If the circumstances require, the owner may designate a substitute registered design professional who shall perform all of the duties required of the original registered design professional in responsible charge. The Building Official shall be notified in writing by the owner if the registered design professional in responsible charge is changed or is unable to continue to perform the duties.

B. The registered design professional in responsible charge shall be responsible for reviewing and coordinating all submittal documents prepared by others, including phased and deferred submittal items, for compatibility with the design of the building.

C. Where structural observation is required by Section 1709 of the California Building Code, the statement of special inspections shall name the individual or firms who are to perform structural observation and describe the stages of construction at which structural observation is to occur.

18.12.060 Permit issuance.

A. Issuance. The application, construction documents and other data filed by an applicant for a permit shall be reviewed by the Building Official. Such construction documents may be reviewed by other departments of the City to check compliance with the laws and ordinances under their jurisdiction. If the Building Official is satisfied that the work described in an application for permit and the construction documents filed

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therewith conform to the requirements of this Chapter and other pertinent laws and ordinances and that the fees and charges as set forth in the schedule of fees and charges established by City Council resolution and other liens, costs, and/or fees due the City have been paid, the Building Official shall issue a permit therefor to the permittee meeting the requirement of Section 18.12.030.

EXCEPTION: The Building Official shall have the authority to withhold the issuance of permits under the following circumstances:

1. Harbor district. No permit shall be issued for the construction, extension, alteration, improvement, erection, remodeling or repair of any pier, slip, basin, wharf, dock or other harbor structure of any building or structure within the harbor district, unless the Board of Harbor Commissioners has first granted permission authorizing such work to be done as provided in the Charter of the City.

2. Marinas. No permit shall be issued for the construction, extension, alteration, improvement, erection, remodeling or repair of any pier, slip, basin, wharf, dock or other marina structure or any building or structure within the Alamitos Bay Marina, Downtown Shoreline Marina or Shoreline Harbor Marina unless the Manager of the Marine Bureau has first granted permission authorizing such work to be done.

3. Fault studies zone. No permit shall be issued for projects located within a Special (Fault) Studies Zone established under Chapter 7.5, Division 2, of the California Public Resources Code unless it can be demonstrated through accepted geologic seismic studies that the proposed structure will be located in a safe manner and not over or astraddle the trace of an active fault. Acceptable geologic seismic studies shall meet the criteria as set forth in rules and regulations established by the Building Official to ensure that such studies are based on sufficient

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geologic data to determine the location or nonexistence of the active fault trace on a site. Prior to approval of a project, a geologic report defining and delineating any hazard of surface fault rupture shall be required. If the City finds that no undue hazard of this kind exists, the geologic report on such hazard may be waived, with approval of the state geologist.

4. Storm water. No permit shall be issued for projects unless it incorporates into the construction documents best management practices necessary to control storm water pollution from sediments, erosion and construction materials leaving the construction site. Such requirements shall be in accordance with the provisions contained in Chapter 18.95 NPDES and SUSMP Regulations.

5. Flood hazards. No permit shall be issued for projects located within all areas of special flood hazards within the jurisdiction of the City of Long Beach unless it can be demonstrated that full compliance with the terms of Chapter 21.65 Flood Damage Prevention and other applicable regulations.

6. Fills containing decomposable material. No permit shall be issued for buildings or structures regulated by this Title within one thousand feet (1,000') of fills containing rubbish or other decomposable material unless the fill is isolated by approved natural or manmade protective systems or unless designed according to the recommendations contained in a report prepared by a licensed civil engineer. Such report shall contain a description of the investigation, study and recommendation to minimize the possible intrusion, and to prevent the accumulation of explosive concentrations of decomposition gases within or under enclosed portions of such building or structure. At the time of the final inspection, the civil engineer shall furnish a signed statement attesting that the building or structure has been constructed in accordance with his

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recommendations as to decomposition gases required herein. Buildings or structures regulated by this Title shall not be constructed on fills containing rubbish or other decomposable material unless provision is made to prevent damage to structure, floor, underground piping and utilities due to uneven settlement of the fill. One-story light frame accessory structures not exceeding four hundred (400) square feet in area nor twelve (12) feet in height may be constructed without special provisions for foundation stability.

7. Construction and demolition recycling program. No permit shall be issued for construction or demolition projects subject to Chapter 18.97 Construction and Demolition Recycling Program unless all of the provisions contained therein are completed to the satisfaction of the Director of Planning and Building or his or her designee.

B. Approval of construction documents. When the Building Official issues a permit, the construction documents shall be approved, in writing or by stamp, as "APPROVED." Construction documents shall be distributed pursuant to Subsection A of Section 18.12.070.

C. Phased approval. The Building Official may issue a permit for the construction of foundation or any other part of a building or structure before the entire construction documents for the whole building or structure have been approved, provided that adequate information and detailed statements have been filed complying with all pertinent requirements of this Title. The holder of such permit for the foundation or other parts of a building or structure shall proceed at the holder's own risk with the building operation and without assurance that a permit for the entire building or structure will be granted.

D. Amended construction documents. Work shall be installed in accordance with the approved construction documents, and any changes

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made during construction that are not in compliance with the approved construction documents shall be resubmitted for approval as an amended set of construction documents and the permittee shall pay a rechecking fee as determined by Section 18.12.150.

18.12.070 Retention, distribution and maintenance of approved construction documents.

A. Distribution of construction documents. One set approved construction documents shall be returned to the applicant, which set shall be kept at the site of the construction or work at all times during which the work authorized thereby is in progress and shall be available and open to inspection by the Building Official or a duly authorized representative. There shall be no deviation from the stamped or approved construction documents without approval by the Building Official. One set of approved construction documents shall be retained by the Building Official pursuant to Subsection B.

B. Retention of construction documents. The duplicate approved construction documents of every building or structure shall be stamped and retained by the department for a period of not less than one year from the date of completion of the work covered therein, after which time the Building Official may, at his or her discretion, either dispose of the copies or retain them as a part of the permanent files of the department as required by Section 19850 of the Health and Safety Code.

EXCEPTION: Construction documents for the following need not be maintained, except where required by the department:

1. Single or multiple dwellings in areas which are not part of a common interest development (as defined in Section 1351 of the Civil Code of California), and not more than two stories and basement in height.

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2. Garages and other structures appurtenant to buildings described in Item 1 of this exception.

3. Farm or ranch buildings.

4. Any one-story building where the span between bearing walls does not exceed twenty five (25) feet. This exception does not, however, apply to a steel frame or concrete building.

5. Alterations to commercial buildings, apartments and hotels which do not require the signature of a registered design professional.

C. Plan maintenance fee. Before issuing a permit, the department shall collect a fee for maintaining construction documents that are required to be retained by this Section. The amount of the plan maintenance fee shall be as set forth in the schedule of fees and charges established by City Council resolution and shall be collected for each separate plan to be retained by the department.

D. Inspection of plans. The copy of the approved construction documents maintained by the department as provided by Subsection B may be available for inspection only on the premises of the department.

EXCEPTION: Construction documents for banks, other financial institutions or public utilities which are maintained by the department may not be inspected without written permission from the owner of the building.

E. Reproduction of construction documents. Construction documents maintained by the department under Subsection B may not be duplicated in whole or in part except with the written permission of the certified, licensed or registered professional or his or her successor, if any, who signed the original documents, and the written permission of the original or current owner of the building, or, if the building is part of a common interest development, with the written permission of the board of directors or governing body of the association established to manage the

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common interest development; upon request by any State agency; or by order of a proper court. In implementing this provision, the department shall comply with the requirements of Health and Safety Code Section 19851.

The department shall also furnish the form of an affidavit to be completed and signed by the person requesting to duplicate the official copy of the construction documents, which contains provisions stating the following:

1. That the copy of the construction documents shall only be used for the maintenance, operation and use of the building.

2. That drawings are instruments of professional service and are incomplete without the interpretation of the certified, licensed or registered professional of record.

3. That subdivision (a) of Section 5536.25 of the Business and Professions Code states that a licensed architect who signs construction documents shall not be responsible for damage caused by subsequent changes to, or use of, those construction documents where the subsequent changes or uses, including changes or uses made by state or local governmental agencies, are not authorized or approved by the licensed architect who originally signed the construction documents, provided that the architectural service rendered by the architect who signed the construction documents was not also a proximate cause of the damage.

The fees specified in the following Item 1 or 2 shall be paid by the person requesting duplication of construction documents:

1. Construction documents that have not been microfilmed and are authorized for reproduction to be duplicated by other than City services will be released only to a department authorized duplicating

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service. The cost of duplicating the construction documents shall be paid directly to the duplicating service by the person requesting duplication. That person shall pay a processing fee for each set of construction documents released to the department as determined by Section 18.12.161.

2. Construction documents that have been microfilmed and are authorized for reproduction shall be duplicated by City services or vendors. The department shall collect an initial service fee for each request for reproduction of construction documents plus an additional fee for each sheet requested to be photocopied as determined by Section 18.12.161.

F. Withdrawal of construction documents. The Building Official shall not permit any original construction documents, or portions thereof upon which a permit has been issued, to be withdrawn from the office of the Building Official, except for official use by representatives of the City.

18.12.090 Validity of permit.

A. The issuance or granting of a permit shall not be construed to be a permit for, or an approval of, any violation of any of the provisions of this Title or of any other law or ordinance. Permits presuming to give authority to violate or cancel the provisions of this Title or any other law or ordinance shall not be valid. The issuance of a permit based on construction documents and other data shall not prevent the Building Official from requiring the correction of errors in the construction documents and other data. The Building Official may prevent the occupancy or use of a building or structure where in violation of this Title or of any other law or ordinance.

B. The issuance of a permit is not an approval or an authorization of the work specified therein. A permit is merely an

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application for inspection, the issuance of which entitles the permittee to inspection of the work which is described therein.

C. Permits issued under the requirements of this code shall not relieve the owner of responsibility for securing required permits for work to be done which is regulated by any other code, department or division of the City of Long Beach.

18.12.100 Expiration, suspension, revocation and transfer of permit.

A. Expiration. Every permit issued shall be valid for a period of two years from the date thereof, provided that any permit shall expire on the one hundred and eightieth (180) day from date of issuance if the work permitted thereunder has not been commenced; or shall expire whenever the Building Official determines the work authorized by any permit has been suspended, discontinued or abandoned for a continuous period of one hundred and eighty (180) days.

EXCEPTION: If the holder of any permit issued by the department presents satisfactory evidence that unusual construction difficulties have prevented work from being started or continued without being suspended within the one hundred and eightieth (180) day time period or completed within the two-year period of validity, the Building Official may grant extensions of time reasonably necessary because of such difficulties.

Notwithstanding the provisions of this Subsection, the validity of a permit may be further restricted in the following conditions:

1. In the case of a building or structure that has been ordered repaired or demolished in accordance with this Title, such time limits as are specified therein shall apply.

2. The Building Official may, because of unusual circumstances or conditions such as, but not limited to, the demolition of an imminently hazardous building, or a grading operation that may be subject to flooding

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during the rainy season, impose restrictions upon the time limits for expiration of any permit.

B. Unfinished buildings or structures. Whenever the department determines by inspection that work on any building or structure for which a permit has been issued and the work started thereon has been suspended for a period of one hundred and eighty (180) days or more, the owner of the property upon which such structure is located, or other person or agent in control of said property, upon receipt of notice in writing from the department to do so, shall, within ninety (90) days from the date of such written notice, obtain a new permit to complete the required work, pay the fee of one-half the amount required for a new permit for such work, provided no changes have been made or will be made in the original construction documents for such work, and diligently pursue the work to completion and provided, further, that such suspension or abandonment has not exceeded one year; or shall remove or demolish the building or structure within one hundred and eightieth (180) days from the date of the written notice.

C. Restore to original condition. Permits that have expired shall have the site, building or project restored to the condition that existed immediately prior to the commencement of work described by such permit.

D. Failure to comply. It shall be unlawful for any owner or representative of the owner, either before or after the issuance of a permit under this Title, and notwithstanding the issuance of such permit, to fail to comply with any order, determination or action of the department.

E. Making false statement to the department. Any person who willfully or knowingly, with the intent to deceive, makes a false statement or representation, or knowingly fails to disclose a material fact in any documentation required by the department to ascertain facts relative to

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this Section, including any oral or written evidence presented, shall be guilty of a misdemeanor. The Building Official may, in writing, suspend or revoke a permit issued under provisions of this Title whenever the permit is issued in error or on the basis of incorrect, inaccurate or incomplete information supplied, or in violation of any ordinance or regulation or of any provision of this Title.

F. Active permits required by this Title may be transferred to a qualified person for a fee as set forth in the schedule of fees and charges established by City Council resolution.

18.12.120 Investigation fees—Work without a permit.

A. Investigation. Whenever any work for which a permit is required by this Title has been commenced without first obtaining such permit, a special investigation shall be made before a permit may be issued for such work.

B. Fee. An investigation fee, in addition to the permit fee, shall be collected whether or not a permit is then or subsequently issued. The investigation fee shall be equal to the amount of the permit fee required by this Title with a minimum fee as set forth in the schedule of fees and charges established by City Council resolution. The payment of such investigation fee shall not exempt any person from compliance with all other provisions of this code nor from any penalty prescribed by law.

The investigation fee may be waived for emergency work when it is proved to the satisfaction of the Building Official that such work was urgently needed and it was impractical to obtain a permit prior to commencement of the work.

18.12.130 Permit fees.

A. Building permit fees. A building permit (exclusive of subpermits) shall be issued for each building or structure to be erected or

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upon which work is to be done thereunder, and for each such permit the applicant shall pay a permit filing fee as set forth in the schedule of fees and charges established by City Council resolution plus a fee computed on the basis of the estimated total cost of the work proposed to be done, in accordance with the building permit fee as set forth in the schedule of fees and charges established by City Council resolution.

In addition to the above, projects regulated under Chapter 18.95 of this code shall pay an additional fee as set forth in the schedule of fees and charges established by City Council resolution.

In addition to the above, projects regulated under Title 24, Part 2, of the California Code of Regulations, Section 108.2.1.2, 109.1 and 1102A, the state's disabled access and adaptability requirements shall pay an additional fee as set forth in the schedule of fees and charges established by City Council resolution.

In addition to the above, projects regulated under Chapter 21.62 of this code shall pay an additional fee as set forth in the schedule of fees and charges established by City Council resolution.

In addition to the above, projects regulated under Section 2700, Chapter 8, Division 2 of the Public Resources Code of the State of California (state strong motion instrumentation program) shall pay an additional fee as set forth in Section 2705, Chapter 8, Division 2 of the Public Resources Code of the state of California.

EXCEPTION: A single combined permit may be issued for the following:

1. The construction, addition or alteration of any building or structure of a Group R-3 or U occupancies, which includes all building, electrical, plumbing, heating, ventilating, and air conditioning work; or

2. The construction, addition or alteration of any sign or sign

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support structure, which includes all building and electrical work.

The total permit fee for the combined building permit shall be as set forth in the schedule of fees and charges established by City Council resolution.

B. Grading permit fees. A grading permit shall be issued to each property or site upon which grading work is to be done thereunder when required pursuant to Subsection B of Section 18.12.010, and for each such permit the applicant shall pay a filing fee as set forth in the schedule of fees and charges established by City Council resolution plus a grading permit fee computed on the basis of the estimated total cubic yard of work proposed to be done as set forth in the schedule of fees and charges established by City Council resolution.

In addition to the above, projects regulated under Chapter 18.95 of this code shall pay an additional fee as set forth in the schedule of fees and charges established by City Council resolution.

C. Sign permit fees. A sign permit shall be issued for each sign or sign support structure to be erected or upon which work is to be done thereunder, and for each such permit the applicant shall pay a filing fee as set forth in the schedule of fees and charges established by City Council resolution plus a sign permit fee computed on the basis of the estimated total cost of the work proposed to be done as set forth in the schedule of fees and charges established by City Council resolution.

D. Determining valuation. The determination of value or valuation under any of the provisions of this Title shall be made by the Building Official. The value to be used in computing the permit and plan review fees shall be the total value of all construction work for which the permit is issued as well as all finish work, painting, roofing, electrical, plumbing, heating, air conditioning, elevators, fire extinguishing systems

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and any other permanent equipment.

No person shall willfully or negligently withhold from or misrepresent to the Building Official any information he or she may request relative to the estimated cost of any proposed work for which an application for a permit has been filed, or misrepresent the cost of any such work.

18.12.140 Plan review fees.

A. Buildings and structures. Except as provided in this Section, an applicant for a building permit shall, in addition to the fee prescribed therefor and at the time of making application for such building permit, pay a plan review fee as set forth in the schedule of fees and charges established by City Council resolution, exclusive of the filing fee. The checking fee for a combined permit shall be as set forth in the schedule of fees and charges established by City Council resolution for a building permit of the same valuation.

EXCEPTION: No plan review fee shall be required for the following:

1. Fences eight feet or less in height and not constructed with masonry or concrete;

2. Canvas awnings;

3. Building permits issued for the following single subtrades: plastering, reroofing, marble and tile;

4. When the Building Official has determined that the submittal of construction documents and other data are not required if it is found that the nature of the work applied for is such that the review of construction documents is not necessary to obtain compliance with this Title.

B. Grading work. An applicant for a grading permit shall, in addition to the fee prescribed therefor and at the time of making

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application for such grading permit, pay a plan review fee to the City as set forth in the schedule of fees and charges established by City Council resolution, exclusive of the filing fee.

C. Signs and sign support structures. An applicant for a sign permit shall, in addition to the fee prescribed therefor and at the time of making application for such sign permit, pay a plan review fee to the City as set forth in the schedule of fees and charges established by City Council resolution, exclusive of the filing fee.

D. Express plan review fees. At the request of the applicant, the department may, at its discretion, provide plan review services at other than normal working hours. An express plan review fee, in addition to the plan review fees charged elsewhere in this code, as set forth in the schedule of fees and charges established by City Council resolution shall be collected at the time of the request.

E. Geologic review fees. A fee as set forth in the schedule of fees and charges established by City Council resolution shall be charged for the review of geologic reports submitted as required by state law for proposed development in seismic hazard zones, including but not limited to, fault rupture, liquefaction and landslide hazard zones.

F. Expiration of plan review. If after a period of one year from date of application for permit, any applicant has failed to pay for and obtain a permit, such application and checking fee shall become invalid and no permit shall be issued unless a new application is submitted and a new checking fee paid. Construction documents submitted at the time of application shall be destroyed if after a period of one year from date of application no permit has been paid for or issued.

18.12.150 Rechecking fees.

A. Fees for rechecking construction documents prior to

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approval. No additional fee shall be charged for verification of the corrections required by the department or other departments. However, when construction documents have been checked and are subsequently so revised by the applicant for reasons other than plan check correction as to necessitate rechecking, the Building Official shall require the applicant to pay a rechecking fee as set forth in the schedule of fees and charges established by City Council resolution which would be required for the cost of that portion of the construction or work which has been revised. However, no additional permit fee will be required unless the revision increases the total cost of the entire project. In that event, the Building Official shall require the applicant to pay an additional permit fee based on the additional cost.

B. Fees for rechecking construction documents after approval. When construction documents are resubmitted for review of changes made to previously approved construction documents, the plan review fee in the case of a building or sign permit shall be based on a rate as set forth in the schedule of fees and charges established by City Council resolution and the plan review fee for a grading permit shall be as set forth in the schedule of fees and charges established by City Council resolution for the number of cubic yards replaced, removed or omitted that were not previously approved.

18.12.160 Fee for verifying and reproducing permit records.

A fee will be charged to verify permit and inspection records, including age of building. Reproduction of permit records may be obtained for a fee. The fee is as set forth in the schedule of fees and charges established by City Council resolution.

18.12.161 Processing fee for reproducing plan records.

A processing fee as set forth in the schedule of fees and charges

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established by City Council resolution shall be charged to process a request for a copy of construction plans on record. A separate processing fee shall be paid for each plan or set of plans involving a single site. The processing fee shall be in addition to fees charged to cover duplicating costs.

18.12.170 Oil and gas well record search.

A fee as set forth in the schedule of fees and charges established by City Council resolution for each lot or parcel located in an oil zone shall be charged for a record search to determine the existence and location of subsurface gas or oil wells.

18.12.180 Oil or gas well abandonment.

A fee as set forth in the schedule of fees and charges established by City Council resolution shall be charged for the inspections required during the abandonment of an oil or gas well.

18.12.190 Special inspection fee.

A. Upon request, the department will make special inspections provided:

1. The applicant makes accessible and exposes elements or structures inspected;

2. That the applicant pays a fee as set forth in the schedule of fees and charges established by City Council resolution for the following:

a. Building inspection,

b. Plumbing inspection,

c. Electrical inspection,

d. Mechanical inspection,

e. Housing inspection (dwellings),

f. Code inspection for business license:

g. Nonteam inspection,

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h. Team inspection,

i. Condominium conversion inspections,

j. Site inspection not otherwise covered.

B. A fee as set forth in the schedule of fees and charges established by City Council resolution per hour or fraction thereof shall be charged for inspections requiring in excess of one hour.

For inspections performed on request at other than normal office hours, a fee as set forth in the schedule of fees and charges established by City Council resolution.

C. Within the scope of the special inspections, the Building Official may approve minor corrections or alterations involving work of a building, plumbing, mechanical or electrical nature with an aggregate total cost of two thousand dollars ($2,000.00) or less.

18.12.201 Disabled access appeals board—Appeals fees.

A fee as set forth in the schedule of fees and charges established by City Council resolution shall be charged to a person appealing to the disabled access appeals board the action of the Building Official in enforcing Title 24, Part 2, of the California Code of Regulations, the state's disabled access and adaptability requirements.

18.12.202 Fees for special inspection and verification of structural observation reports.

A. To supervise the performance of registered special inspectors required to be employed for certain types of work as provided by Section 18.16.060 of this Title, a fee as set forth in the schedule of fees and charges established by City Council resolution for each type of work shall be paid at the time of permit issuance.

B. To verify that all structural observation reports have been received prior to the issuance of a certificate of occupancy, a fee as set

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forth in the schedule of fees and charges established by City Council resolution shall be paid at the time of permit issuance.

18.12.230 Reinspection fee.

A. A reinspection fee may be charged for each inspection or reinspection when the portion of work for which the inspection or reinspection is called is not complete or when the corrections called for are not made. This Section is not to be interpreted as requiring reinspection fees the first time a job is rejected for failure to comply with the requirements of this Title, but as controlling the practice of calling for inspections before the job is ready for such inspection or reinspection.

B. A reinspection fee may be assessed when the permit card is not properly posted on the work site, the approved construction documents are not readily available to the inspector, for failure to provide access on the date for which inspection is requested, or for deviating from the approved construction documents requiring the approval of the Building Official.

C. To obtain a reinspection the applicant shall file an application therefor in writing upon a form furnished for that purpose and pay a reinspection fee as set forth in the schedule of fees and charges established by City Council resolution.

D. In instances where reinspection fees have been assessed, no additional inspection of the work will be performed until the required fees have been paid.

18.12.235 Waiver of fees.

The Director of Planning and Building may waive any application fee imposed on or after October 1, 1996 pursuant to the provisions of this code if the Director first finds as follows:

A. A permit has been issued which does not fully conform to the

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provisions and requirements of law; and

B. There is no evidence that the applicant, in seeking the permit intentionally sought to avoid conformance to the provisions and requirements of law; and

C. Substantial construction commenced in good faith reliance on that permit; and

D. Stoppage has been ordered subsequent to such commencement as a result of the failure of the permit to conform to the provisions and requirements of law; and

E. The application or applications for which a fee waiver is requested and granted are necessary in order to authorize the issuance of the permit in a manner fully conforming to the provisions and requirements of law.

18.12.240 Refunds.

A. No portion of any permit as required in this Title shall be refunded to an applicant unless, prior to commencement of actual work thereunder, the proposal to do such work is abandoned, or it is discovered that such permit is void under provisions of any ordinance of the City. No portion of a checking fee shall be refunded to an applicant if any checking of the construction documents has been done in the office of the Building Official.

B. Refunds shall be made in the calculated amount so determined in this Section and under the conditions set forth in Section 3.48.040 and 3.48.060 of this code.

C. Before any refund is made under this Chapter, the Building Official shall deduct a percent as set forth in the schedule of fees and charges established by City Council resolution of the fee paid to pay for expenses incurred by the City in connection with accepting the

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construction documents, passing upon the application for or issuance of the permit, and the sum shall be deducted from the fee so paid and the balance paid to such person. If the person entitled to the refund is an individual and such person becomes deceased, the refund may be made to such person or persons entitled to receive the money.

D. Any application for refund must be filed by the person entitled to receive such refund within the prescribed expiration period.

Section 4. Chapter 18.16 of the Long Beach Municipal Code is amended in its entirety and restated to read as follows:

CHAPTER 18.16

INSPECTIONS

I. General Regulations

18.16.010 Duty of permittee.

A. General. All construction or work for which a permit is required shall be subject to inspection by the Building Official and such construction or work shall remain accessible and exposed for inspection purposes until approved. Neither the Building Official, authorized employee of the department, nor the City shall be liable for expense entailed in the removal or replacement of any material required to allow inspection. Certain types of construction shall have special inspections by registered special inspectors as specified in Sections 18.16.060 through 18.16.120 of this Chapter and Section 1704 and 1707 of the California Building Code. Prior to the issuance of a Certificate of Occupancy as specified in Section 18.16.150, a final inspection in accordance with Section 18.16.040 shall be made by the department of all construction or work for which a permit has been issued.

B. Survey. In the absence of any designation of the proper

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location of the lot on which a building is to be erected, for which building a permit has been issued, the department may require the owner to have the lot surveyed and staked by a registered land surveyor or registered civil engineer so that the proper location of the building on the lot may be determined.

In addition, the department may require the owner to have a registered land surveyor or registered civil engineer to verify compliance of the building or structure with the approved construction documents.

C. Approval not a violation of code. Approval as a result of an inspection shall not be construed to be an approval of a violation of the provisions of this Title or of any other laws or regulations applicable thereto. Inspections presuming to give authority to violate or cancel the provisions of this Title or of any other laws or regulations applicable thereto shall not be valid. No approval shall relieve or exonerate any person from the responsibility of complying with the provisions and intent of this Title.

18.16.011 Inspection requests.

It shall be the duty of the holder of the building permit or their duly authorized agent to notify the Building Official when work is ready for inspection. It shall be the duty of the permit holder to provide access to and means for inspections of such work that are required by this code. The Building Official may require that every request for inspection be filed at least one working day before such inspection is desired. Such request may be in writing, by telephone or by other means at the option of the Building Official.

18.16.020 Inspection record card.

A. Posting inspection card. The Building Official shall furnish with each permit an inspection record card to be posted in a conspicuous

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place on the front premises (or electric meter box) and in such position as to allow the Building Official to conveniently make the required entries thereon regarding inspection of the work. The inspection record shall show the location, nature of work to be done, the number of the permit and list the required inspections.

B. Required information. Prior to requesting final inspection of any building or project where the valuation of the permit issued is over ten thousand dollars ($10,000.00), the general contractor, or the owner if there is no general contractor, shall furnish the Building Official a list of the names and addresses of all subcontractors and specialty contractors, including City business license numbers, performing work or services on the building or project, other than those required to obtain separate permits. The information required to be furnished by the provisions of this Section shall be on such forms provided by the department.

C. Required City license. The general contractor, or the owner if there is no general contractor, shall, at the time any subcontract is entered into for the performance of any work which is to be performed within the City, ascertain that such subcontractor possesses the required license from the City, and such general contractor or owner shall not permit any of the work contemplated by such subcontract until the subcontractor obtains the required license from the City.

18.16.030 Inspection approvals required.

A. No work shall be done on any part of the building or structure beyond the point indicated in each successive inspection without first obtaining the written approval of the Building Official. The Building Official, upon notification, shall make the requested inspections and shall either indicate the portion of the construction that is satisfactory as completed, or notify the permit holder or his or her agent wherein the

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same fails to comply with this Title. Any portions that do no comply shall be corrected and such portion shall not be covered or concealed until authorized by the Building Official. Such written approval shall be given only after an inspection has been made of each successive step in the construction as indicated by each of the inspections required in Section 18.16.040.

B. There shall be a final inspection and approval on all buildings when completed and ready for occupancy.

18.16.040 Required inspections.

A. General. The Building Official, upon notification, shall make the inspections set forth in Subsection B.

B. Inspection type. The following inspections are required, if applicable, to the building or portion thereof:

1. Footing and foundation inspection. Footing and foundation inspections shall be made after excavations for footings are complete and any required reinforcing steel is in place. For concrete foundations, any required forms shall be in place prior to inspection. Materials for the foundation shall be on the job, except where concrete is ready mixed in accordance with ASTM C 94, the concrete need not be on the job.

2. Concrete slab and under-floor inspection. Concrete slab and under-floor inspections shall be made after all in-slab or under-floor reinforcing steel and building service equipment, conduit, piping accessories and other ancillary equipment items are in place, but before any concrete is placed or floor sheathing installed, including the subfloor.

3. Lowest floor elevation. In flood hazard areas, upon placement of the lowest floor, including the basement, and prior to further vertical construction, the elevation certification required in Chapter 21.62 Flood Damage Prevention or Section 1612.5 of the California Building

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Code shall be submitted to the Building Official.

4. Frame inspection. Framing inspections shall be made after the roof deck or sheathing, all framing, fire blocking and bracing are in place and all pipes, chimneys and vents to be concealed are complete and the rough electrical, plumbing, heating wires, pipes and ducts are approved.

5. Lath and gypsum board inspection. Lath and gypsum board inspections shall be made after lathing and gypsum board, interior and exterior, are in place, but before any plastering is applied or gypsum board joints and fasteners are taped and finished.

6. Fire resistant penetrations. Protection of joints and penetrations in fire resistance-rated assemblies shall not be concealed from view until inspected and approved.

7. Energy efficiency inspections. Inspections shall be made to determine compliance with the California Energy Code, Title 24 Part 6 and shall include, but not be limited to, inspection for: envelope insulation R and U values, fenestration U value, duct system R value, and HVAC and water-heating equipment efficiency.

8. Reinforced masonry. In grouted masonry when vertical reinforcing steel is in place and other reinforcing steel distributed and ready for placing, but before any units are laid up.

9. Structural steel. When structural steel members are in place and required connections are complete, but before concealing any members or connection.

10. Final inspection. Final inspection shall be made after all work required by the permit is completed and prior to occupancy.

18.16.055 Noninspected work.

No person shall own, use, occupy or maintain any structure on

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which noninspected work has been performed. For the purpose of this Title, "noninspected work" shall be defined as any erection, construction, enlargement, alteration, repair, remodel, movement, removal, improvement, conversion or demolition for which a permit was first obtained, but which has progressed beyond the point indicated in successive inspections, including, but not limited to, inspections as set forth in Sections 18.16.040 and 18.16.050 of this Chapter and Section 1701 of the California Building Code, without first obtaining inspection by and approval of the Building Official.

II. Registered Inspector

18.16.060 Special inspections—When required.

In addition to the inspections to be made by the employee of this department, as specified in this Chapter, the owner or the registered design professional in responsible charge acting as the owner's agent shall employ one or more special inspectors who shall provide inspections during construction on the types of work listed under Section 1704 or 1707 of the California Building Code. The special inspector shall be qualified under Section 18.16.070 of this Title. The special inspector may be employed either directly or through the architectural or engineering firm in charge of the design of the structure, or through the geologic or soils engineering firm providing technical design data for the project, or through an independent approved inspection/test firm. In any case, the special inspector shall be approved by and shall be responsible to the architectural or engineering firm in charge of the design of the structure, or the geologic or soils engineering firm providing technical design data for the project.

18.16.070 Qualifications of special inspector.

The registered special inspector shall be a qualified person who

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shall demonstrate his or her competence, to the satisfaction of the Building Official, for inspection of the particular type of construction or operation requiring special inspection.

18.16.080 Examination and certificate.

A. Any person desiring to be registered as a registered inspector shall first qualify by passing a written or oral examination or both, given by the Building Official. Upon application for such examination, such person shall pay to the City a nonrefundable registration fee as set forth in the schedule of fees and charges established by City Council resolution.

B. Every applicant passing such examination shall be issued a certificate as a registered inspector upon payment of a fee as set forth in the schedule of fees and charges established by City Council resolution.

C. All certificates issued by the Building Official shall expire one year from the date issued, and may be renewed from year to year upon the payment of an annual fee as set forth in the schedule of fees and charges established by City Council resolution. Application for renewal shall be made within thirty (30) days following the date of expiration. Expired certificates may be renewed within sixty (60) days following the date of expiration: provided, that the renewal fee shall be as set forth in the schedule of fees and charges established by City Council resolution. After a certificate has expired for one year, it shall not be renewed, and an application, nonrefundable fee and a reexamination will be required.

18.16.090 Revocation of registration.

The Building Official may revoke the registration of any registered inspector, or the assignment of such registered inspector to any particular building or structure, for incompetency or failure to conscientiously carry out his or her duties as above provided, in which event the Building Official

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may stop all further work upon the building or structure involved until some other person has been qualified, registered and assigned thereto by the Building Official.

18.16.100 Duties of special inspector.

A. The registered special inspector shall be employed on the work, without expense or liability to the City, either on a full time or part time basis, depending upon the magnitude of the work as adjudged by the Building Official. The determination of the percentage of time necessary for the job shall be left to the discretion of the registered special inspector, subject to approval of the Building Official.

B. The registered special inspector shall bear a joint responsibility to the owner, or his or her agent, and the Building Official. He or she shall, for no purpose, be deemed an employee of the City, the contractor, a subcontractor or a material vendor. The assignments of the registered special inspector to each job shall be reported to the Building Official before commencing work.

C. In addition to required verification and inspection specified in Section 1704 and 1707 of the California Building Code, the registered special inspector shall observe the work assigned to be certain it conforms to the approved construction documents. On such building or structure it shall be the duty of every registered special inspector to inspect carefully all materials proposed to be used in connection with any work covered by any permit issued by the Building Official, and the registered special inspector shall obtain full information regarding the strength and durability of new types of materials where their use involves structural safety. He or she shall make such reports in writing as may be required by the Building Official regarding the progress of the work, and any deviations, defects, delays, materials, working conditions and other matters which may in any

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manner affect the structural safety and strength of the building. He or she shall be directly responsible for enforcing all other ordinances and laws applicable to the work to which he or she is assigned.

D. The registered special inspector shall furnish inspection reports to the Building Official, the registered design professional in responsible charge and other designated persons. All discrepancies shall be brought to the immediate attention of the contractor for correction; then, if uncorrected, to the proper design authority and to the Building Official. He or she shall notify the Building Official of any attempt to cover, conceal, patch or repair any defect in materials or workmanship, and he or she shall report every infraction of any ruling of the Building Official. In furtherance of his or her aforesaid duties, he or she shall have the authority to compel the removal of defective materials and the correction of defective workmanship, or to suspend or stop further work pending a ruling of the Building Official.

E. The registered special inspector shall submit a final signed report stating whether the work requiring special inspection was, to the best of his or her knowledge, in conformance with the approved construction documents and the applicable workmanship provisions of this Title.

18.16.110 Termination of duties—Approval of certificate of compliance.

A. Every registered inspector shall remain constantly upon the work to which he or she is assigned during the process of construction, and unless otherwise removed from the job, his or her duties shall terminate only when a certificate of compliance is issued by him or her and approved by the Building Official. Such certification of compliance shall bear a statement signed by the registered inspector stating that the work upon the building or structure to which he or she has been assigned

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has been completed in a satisfactory manner and that the regulations of this Title affecting the structural features of such building or structure have been fully complied with. If there have been any infractions of this Title, they shall be noted in this statement.

B. The Building Official shall approve such certificate of compliance filed by the registered inspector if after inspection the structural features of such building or structure are found to be in accordance with the provisions of this Chapter. Each certificate of compliance shall bear the legal description of the property upon which such building or structure is located and an identifying description of the building.

18.16.120 Waiver of special inspection.

The Building Official may waive the requirement for the employment of a registered inspector if he or she finds that the construction is of minor nature.

III. Certificate of Occupancy

18.16.150 Certificate required for use or occupancy.

To safeguard life and limb, health, property and public welfare, no building or structure shall be used or occupied, and no change in the existing occupancy classification of a building or structure or portion thereof shall be made until the Building Official has issued a certificate of occupancy therefor as provided in this Chapter.

Issuance of a certificate of occupancy shall not be construed as an approval of a violation of the provisions of this Title or of other ordinances of the City. Certificates presuming to give authority to violate or cancel the provisions of this Title or of other ordinances of the jurisdiction shall not be valid.

EXCEPTIONS:

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1. Unless it is specifically required by other provisions of this Title, no existing building or portion thereof shall require a Certificate of Occupancy, provided the occupancy housed therein is the same for which the original building permit was issued and a final inspection approved.

2. No structure, the architecture of which inhibits occupancy, shall require a Certificate of Occupancy.

18.16.160 Change in use or occupancy.

No change shall be made in the use or occupancy of any building except as specified in Section 3406 of the California Building Code.

18.16.170 Issuance of certificates.

After the Building Official inspects the building or structure and finds no violations of the provisions of this Title or other laws that are enforced by the department or other departments within the City, the Building Official shall issue a certificate of occupancy that contains the following:

A. The building permit number.

B. The address of the building.

C. A description of that portion of the building for which the certificate is issued.

D. A statement that the described portion of the building has been inspected for compliance with the requirements of this code for group and division of occupancy and the use for which the proposed occupancy is classified.

E. The name of the Building Official.

18.16.180 Temporary certificate.

Notwithstanding the provisions of Section 18.16.170, if the Building Official finds that no substantial hazard will result from the occupancy of any building, or portion thereof, before the same is completed, and satisfactory evidence is submitted that the work could not have been

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completed prior to the time such occupancy is desired because of its magnitude or because of unusual construction difficulties, and where applicable the City Engineer or duly authorized representative has reported that all required public improvements have been completed, the Building Official may issue a temporary certificate of occupancy for any building or portion thereof.

The Building Official may issue a temporary Certificate of Occupancy notwithstanding the fact that all required public improvements have not been completed, if the Building Official finds that the failure to complete the public improvements was due to circumstances over which the person applying for the Certificate of Occupancy had no control.

In addition, the Building Official may issue a temporary Certificate of Occupancy for an existing building, or portion thereof, provided no substantial hazard will result and satisfactory evidence is submitted justifying the need for such temporary occupancy.

Applicants for this temporary certificate of occupancy shall pay an investigation fee as set forth in the schedule of fees and charges established by City Council resolution for which approval of temporary occupancy is sought with the minimum fee as set forth in the schedule of fees and charges established by City Council resolution. An additional investigation fee shall be paid to extend a temporary certificate of occupancy beyond thirty (30) days in an amount as set forth in the schedule of fees and charges established by City Council resolution of the initial investigation fee as set forth in the schedule of fees and charges established by City Council resolution for each additional thirty (30) day period or fraction thereof.

18.16.190 Posting.

The certificate of occupancy shall be posted in a conspicuous place

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on the premises and shall not be removed except by the Building Official.

EXCEPTION: Group R-3 and Group U occupancies.

18.16.200 Revocation.

The Building Official may, in writing, suspend or revoke a certificate of occupancy issued under the provisions of this Title whenever the certificate is issued in error, or on the basis of incorrect information supplied, or when it is determined that the occupancy or the maintenance of any building or structure, or any portion thereof, continues contrary to or in violation of any provision of this Title, and such continued occupancy or maintenance will result in the exposure of occupants and/or people in the vicinity to hazardous, dangerous or unsafe conditions. Such suspension or revocation shall be immediate but shall be subject to appeal in accordance with the provisions of Chapter 18.20.

Section 5. Chapter 18.24 of the Long Beach Municipal Code is amended in its entirety and restated to read as follows:

CHAPTER 18.24

BUILDING CODES

18.24.010 Adoption.

The City Council adopts and incorporates by reference as though set forth in full in this Chapter the following:

A. The California Building Code, 2007 Edition, Volumes I and II and Appendices, which is based on, and which amends the provisions of the 2006 International Building Code (model code), as developed by the International Code Council;

B. The Uniform Housing Code, 1997 Edition, as developed by the International Conference of Building Officials.

The adoption of the codes are subject to the changes, amendments

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and modifications to them as adopted in this Chapter, and certain provisions of the Long Beach Municipal Code, which shall remain in full force and effect as provided in this Title. Said codes and code provisions shall constitute and be known as the Long Beach Building Code. A copy of the California Building Code Volumes I and II and Appendices, and the Uniform Housing Code, printed as codes in book form, shall be on file in the office of the City Clerk.

18.24.020 Amendments to codes.

The 2007 Edition of the California Building Code, Volumes I and II and Appendices, and the 1997 Edition of the Uniform Housing Code are amended and modified as set forth in Sections 18.24.030 through 18.24.430.

18.24.030 Application.

The provisions of the model code (the International Building Code), which are incorporated into the California Building Code, are applicable to all occupancy groups and uses regulated by the model code. The amendments made by the state agencies to the model code and incorporated into the California Building Code are applicable only to those occupancies or uses which the state agency making the amendments is authorized to regulate, as listed in Chapter 1 of the California Building Code. The building and safety bureau shall only enforce those amendments made by the following state agencies:

A. The Department of Housing and Community Development (HCD) as specified in Section 108 of the 2007 California Building Code.

B. Division of the State Architect, Access Compliance (DSA/AC) as specified in Section 109 of the 2007 California Building Code.

C. Office of the State Fire Marshal (SFM) as specified in

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Section 111 of the 2007 California Building Code.

D. Office of Statewide Health, Planning and Development (OSHPD 3) as specified in Section 110 of the 2007 California Building Code.

E. California Energy Commission (CEC) as specified in Section 105 of the 2007 California Building Code.

18.24.040 Sections deleted from codes.

The following sections of the 2007 Edition of the California Building Code, Volumes I and II, and Appendices, and the 1997 Edition of the Uniform Housing Code are deleted.

A. Section 1805.4.5 and 1805.4.6 of Chapter 18; Chapter 31B, 31C, 31D, 31F; Section 3407, 3408, 3409 and 3410 of Chapter 34; Appendix Chapter 1; Section H109.2, H110.3, H110.4, H110.5, H112.4, H113.3, and H113.4 of Appendix H; Appendix Chapter A, B, D, E, F and G of the California Building Code.

B. Chapters 1, 2, 3, 4, 10, 11, 12, 13, 14, 15, and 16 of the Uniform Housing Code.

18.24.050 Certain municipal code provisions still in effect.

Notwithstanding the adoption of the 2007 Edition of the California Building Code, Volumes I and II, and Appendices, and the 1997 Edition of the Uniform Housing Code, the following Chapters of this Title shall remain in full force and effect, subject to any amendments to these Chapters:

Chapter 18.04, “General Provisions”;

Chapter 18.08, “Definitions”;

Chapter 18.12, “Permits”;

Chapter 18.16, “Inspections”;

Chapter 18.17, “Transportation Improvement Fee”;

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Chapter 18.18, “Park and Recreation Facilities Fee”;

Chapter 18.19, “Long Beach Airport Traffic Study Area Traffic Fee and Mitigation Requirements”;

Chapter 18.20, “Administration and Enforcement”;

Chapter 18.21, “Maintenance of Long Term Boarded and Vacated Buildings”;

Chapter 18.24, “Building Codes”;

Chapter 18.28, “Electrical Code”;

Chapter 18.32, “Electrical Regulations”;

Chapter 18.36, “Mechanical Code”;

Chapter 18.40, “Plumbing Code”;

Chapter 18.44, “Plumbing Regulations”;

Chapter 18.52, “Moving Buildings”;

Chapter 18.64, “Sandblasting”;

Chapter 18.68, “Earthquake Hazard Regulations”;

Chapter 18.69, “Voluntary Earthquake Hazard Reduction in Existing Wood Frame Residential Buildings with Weak Cripple Walls and Unbolted Sill Plates”;

Chapter 18.70, “Voluntary Earthquake Hazard Reduction in Existing Wood Frame Residential Buildings with Soft, Weak or Open Front Walls”;

Chapter 18.71, “Voluntary Earthquake Hazard Reduction in Existing Reinforced Concrete Buildings and Concrete Frame Buildings with Masonry Infills”;

Chapter 18.72, “Voluntary Earthquake Hazard Reduction in Existing Reinforced Concrete and Reinforced Masonry Wall Buildings with Flexible Diaphragms”;

Chapter 18.76, “Report on Available Off Street Parking Spaces Upon Resale”;

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Chapter 18.80, “Demolition of Historic Landmarks”;

Chapter 18.90, “Alternative Building Regulations for Live/Work Uses”;

Chapter 18.95, “NPDES and SUSMP Regulations”;

Chapter 18.96, “Visitability of Dwelling Units”;

Chapter 18.97, “Construction and Demolition Recycling Program”; and

Chapter 18.99, “Findings”.

18.24.060 CBC Section 201.4 amended – Terms not defined.

Section 201.4 of the 2007 California Building Code is amended to read as follows:

201.4 Terms not defined. Where terms are not defined through the methods authorized by this Section, such terms shall have ordinarily accepted meanings such as the context implies. Webster’s Third New International Dictionary of the English Language, Unabridged shall be considered as providing ordinarily accepted meanings.

18.24.070 CBC Section 202 amended – Additional definition.

Section 202 of Chapter 2 of the California Building Code is amended by adding the definition of “building service equipment”.

“Building service equipment” refers to the plumbing, mechanical, electrical and elevator equipment including piping, wiring, fixtures and other accessories which provide sanitation, lighting, heating, ventilation, cooling, refrigeration, fire-fighting and transportation facilities essential to the occupancy of the building or structure for its designated use.

18.24.071 CBC Section 202 amended--“High-rise structure” definition.

Subsection 2 of Section 202 of Chapter 2 of the California Building Code “High-rise structure” definition is amended by the addition of a sentence to read as follows:

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"Refer to the Long Beach Fire Code (Chapter 18.48) for local fire code amendments."

18.24.072 CBC Section 901.7 amended--Fire areas.

Section 901.7 of Chapter 9 of the California Building Code is amended by the addition of a sentence to read as follows:

"Refer to the Long Beach Fire Code (Chapter 18.48) for local fire code amendments."

18.24.073 CBC Section 903.1 amended--General.

Section 903.1 of Chapter 9 of the California Building Code is amended by the addition of a sentence to read as follows:

"Refer to the Long Beach Fire Code (Chapter 18.48) for local fire code amendments."

18.24.074 CBC Section 903.2 amended--Where required.

Section 903.2 of Chapter 9 of the California Building Code is amended by the addition of a sentence to read as follows:

"Refer to the Long Beach Fire Code (Chapter 18.48) for local fire code amendments."

18.24.075 CBC Section 903.4 amended--Sprinkler system monitoring and alarms.

Section 903.4 of Chapter 9 of the California Building Code is amended by the addition of a sentence to read as follows:

'"Refer to the Long Beach Fire Code (Chapter 18.48) for local fire code amendments."

18.24.076 CBC Section 903.7 amended--Group R.

Section 903.7 of Chapter 9 of the California Building Code is amended by the addition of a sentence to read as follows:

"Refer to the Long Beach Fire Code (Chapter 18.48) for local fire code amendments."

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18.24.077 CBC Section 907.2.7.1 amended--Occupant notification.

Section 907.2.7.1 of Chapter 9 of the California Building Code is amended by the addition of a sentence to read as follows:

"Refer to the Long Beach Fire Code (Chapter 18.48) for local fire code amendments."

18.24.078 CBC Section 1009.11.1 amended--Roof access.

Section 1009.11.1 of Chapter 10 of the California Building Code is amended by the addition of a sentence to read as follows:

"Refer to the Long Beach Fire Code (Chapter 18.48) for local fire code amendments."

18.24.080 CBC Section 1405.6 amended – Stone veneer.

Delete Section 1405.6 of the 2007 California Building Code and replace with the following:

1405.6 Masonry or Stone veneer. Support of masonry and stone veneer shall be designed, unless the masonry or stone veneer complies with the following.

1405.6.1 Masonry and stone units [5 inches maximum in thickness]. Masonry and stone veneer not exceeding 5 inches in thickness may be anchored directly to structural masonry, concrete or studs in one of the following manners:

1. Wall ties shall be corrosion resistant, made of sheet metal, shall have a minimum thickness of 0.0785 inch (No. 14 galvanized sheet gage) by 1 inch and shall be attached to the backing, as the veneer is laid, by minimum #10 hex head galvanized screws with penetration of at least 2 inches into the framing member, placed not more than 1/4 inch above the extended leg of the angle tie. Wall ties shall be spaced so as to support not more than 2 square feet of wall area but shall not be more than 24 inches on center horizontally. In Seismic Design Category D, E or F, wall

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ties shall have a lip or hook on the extended leg that will engage or enclose a horizontal joint reinforcement wire having a diameter of 0.148 inch (No. 9 B.W. gage) or equivalent. The joint reinforcement shall be continuous with butt splices between ties permitted.

When applied over wood stud construction, the studs shall be spaced a maximum of 16 inches on center and approved paper, a minimum 30# fiberglass felt, 4 inch minimum on horizontal laps and 6 inch minimum on end laps, shall first be applied over minimum 15/32 inch plywood sheathing except as otherwise provided in Section 1402, and an air space of at least 1 inch shall be maintained between the backing and the veneer. Spot bedding at all ties shall be of cement mortar.

2. Veneer may be applied with 1-inch-minimum grouted backing space which is reinforced by not less than 2-inch by 2-inch 0.065 inch (No. 16 B.W. gage) galvanized wire mesh placed over waterproof paper backing and anchored directly to stud construction. Such construction shall be allowed to a height not to exceed 4 feet above grade.

The stud spacing shall not exceed 16 inches on center. The galvanized wire mesh shall be anchored to wood studs by galvanized steel wire furring nails at 4 inches on center or by barbed galvanized nails at 6 inches on center with a 1-1/8-inch-minimum penetration. The galvanized wire mesh may be attached to steel studs by equivalent wire ties. If this method is applied over solid sheathing the mesh must be furred for embedment in grout. The wire mesh must be attached at the top and bottom with not less than 8–penny common wire nails. The grout fill shall be placed to fill the space intimately around the mesh and veneer facing.

1405.6.2 Stone units [10 inches maximum in thickness]. Stone veneer units not exceeding 10 inches in thickness may be anchored directly to structural masonry or concrete. Anchor ties shall not be less

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than 0.109 inch (No. 12 B.W. gage) galvanized wire, or approved equal, formed as an exposed eye and extending not less than 1/2 inch beyond the face of the backing. The legs of the loops shall not be less than 6 inches in length bent at right angles and laid in the masonry mortar joint and spaced so that the eyes or loops are 12 inches maximum on center in both directions. There shall be provided not less than a 0.109 inch (No. 12 B.W. gage) galvanized wire tie, or approved equal, threaded through the exposed loops for every 2 square feet of stone veneer. This tie shall be a loop having legs not less than 15 inches in length so bent that it will lie in the stone veneer mortar joint. The last 2 inches of each wire leg shall have a right angle bend. One inch of cement grout shall be placed between the backing and the stone veneer.

18.24.085 CBC Section 1603.1.8 amended – Systems and components requiring special inspections for seismic resistance.

Section 1603.1.8 of Chapter 16 of the 2007 California Building Code is amended by amending the reference to "Sections 106.1, Appendix Chapter 1" to read "Section 18.12.050."

18.24.090 CBC Section 1612.3 amended – Establishment of flood hazard areas.

Section 1612.3 of the 2007 California Building Code is amended to read as follows:

1612.3 Establishment of flood hazard areas. To establish flood hazard areas, the governing body shall adopt a flood hazard map and supporting data. The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency in an engineering report entitled "The Flood Insurance Study for, the City of Long Beach" dated July 6, 1998, as amended or revised with the accompanying Flood Insurance Rate Map

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(FIRM) and Flood Boundary and Floodway Map (FBFM) and related supporting data along with any revisions thereto. The adopted flood hazard map and supporting data are hereby adopted by reference and declared to be part of this Section.

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

18.24.095 CBC Section 1612.5 amended – Flood hazard documentation.

Section 1612.5 of Chapter 16 of the 2007 California Building Code is amended by amending the reference to "Sections 109.3.3, Appendix Chapter 1" to read "Section 18.16.040.B.3."

18.24.095 CBC Section 1612.5 amended--Flood hazard documentation.

Section 1612.5 of Chapter 16 of the 2007 California Building Code is amended by amending the reference to "Sections 109.3.3, Appendix Chapter 1" to read "Section 18.16.040.B.3."

18.24.100 CBC Section 1613.6.1 amended – Assumption of flexible diaphragm.

Section 1613.6.1 of the 2007 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.

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2. Each line of vertical elements of the lateral-force-resisting system complies with the allowable story drift of Table 12.12-1.

3. Vertical elements of the lateral-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 lateral-force-resisting system are designed in accordance with Section 2305.2.5 of the California Building Code.

EXCEPTION: In lieu of Section 2305.2.5, flexible diaphragm assumption is permitted to be used for buildings up to two stories in height provided cantilevered diaphragms supporting lateral-force-resisting elements from above does not exceed 15 percent of the distance between lines of lateral-force-resisting elements from which the diaphragm cantilevers nor one-fourth the diaphragm width perpendicular to the overhang.

18.24.110 New CBC 1613.7 added – Suspended ceiling.

Section 1613.7 is added to Chapter 16 of the 2007 California Building Code to read as follows:

1613.7 Suspended Ceilings. Minimum design and installation standards for suspended ceilings shall be determined in accordance with the requirements of Chapter 25 of this Code and this Subsection.

1613.7.1 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.

1613.7.2 General. The suspended ceilings and lighting systems shall be limited to 6 feet below the structural deck unless the lateral bracing is designed by a licensed engineer or architect.

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1613.7.3 Design and Installation Requirements.

1613.7.3.1 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.

1613.7.3.2 Support for Appendages. Cable trays, electrical conduits and piping shall be independently supported and independently braced from the structure.

1613.7.3.3 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 712 of this Code.

1613.7.3.4 Perimeter Members. A minimum wall angle size of at least a two inch horizontal leg shall be used at perimeter walls and interior full height partitions. The first ceiling tile shall maintain 3/4 inch 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 Superintendent of Building.

1613.7.4 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.

1613.7.4.1 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

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vertical hangers shall not exceed 2 feet on center along the entire length of the suspended ceiling assembly located along the means of egress or at the lobby.

1613.7.4.2 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 radius of the exit lights and exit signs.

1613.7.4.3 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.

1613.7.4.4 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.

18.24.120 New CBC Section 1614 add – Modification to ASCE 7.

Section 1614 is added to Chapter 16 of the 2007 California Building Code to read as follows:

SECTION 1614
MODIFICATION TO ASCE 7.

1614.1 General. The text of ASCE 7 shall be modified as indicated in this Section.

1614.1.1 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.

1614.1.2 ASCE 7, 12.3.1.1. Modify ASCE 7 Section 12.3.1.1 to read as follows:

12.3.1.1 Flexible Diaphragm Condition. Diaphragm constructed of untopped steel decking or wood structural panels are permitted to be idealized as flexible in structures in which the vertical elements are steel

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or composite steel and concrete braced frames, or concrete, masonry, steel, or composite shear walls. Diaphragms of wood structural panels or untopped steel decks in one- and two-family residential buildings of light-frame construction shall also be permitted to be idealized as flexible.

Flexible diaphragm assumption is permitted to be used for buildings up to two stories in height provided cantilevered diaphragms supporting lateral-force-resisting elements from above does not exceed 15 percent of the distance between lines of lateral-force-resisting elements from which the diaphragm cantilevers nor one-fourth the diaphragm width perpendicular to the overhang.

1614.1.3 ASCE 7, Section 12.8.1.1. Modify ASCE 7 Section 12.8.1.1 by amending Equation 12.8-5 as follows:

$C_s = 0.044\ S_{DS}\ I \geq 0.01$ (Eq. 12.8-5)

1614.1.4 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

1614.1.5 ASCE 7, Section 12.8.7. Modify ASCE 7 Section 12.8.7 by amending Equation 12.8-16 as follows:

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

1614.1.6 ASCE 7, 12.11.2.2.3. Modify ASCE 7 Section 12.11.2.2.3 to read as follows:

12.11.2.2.3 Wood Diaphragms. In wood diaphragms, the continuous ties shall be in addition to the diaphragm sheathing. Anchorage shall not be accomplished by use of toe nails or nails subject

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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 wood diaphragms supporting concrete or masonry walls, wood diaphragms 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.

1614.1.7 ASCE 7, Section 12.12.3. Replace ASCE 7 Section 12.12.3 as follows:

12.12.3 Minimum Building Separation. All structures shall be separated from adjoining structures. Separations shall allow for the maximum inelastic response displacement (Δ_M). Δ_M shall be determined at critical locations with consideration for both translational and torsional displacements of the structure as follows:

$$\Delta_M = C_d \delta_{max} \qquad \text{(Equation 16-45)}$$

where δ_{max} is the calculated maximum displacement at Level x as define in ASCE 7 Section 12.8.4.3.

Adjacent buildings on the same property shall be separated by at least a distance Δ_{MT}, where

$$\Delta_{MT} = \sqrt{(\Delta_{M1})^2 + (\Delta_{M2})^2} \qquad \text{(Equation 16-46)}$$

and Δ_{M1} and Δ_{M2} are the maximum inelastic response displacements of the adjacent buildings.

Where a structure adjoins a property line not common to a public

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way, the structure shall also be set back from the property line by at least the displacement, Δ_M, of that structure.

EXCEPTION: Smaller separations or property line setbacks shall be permitted when justified by rational analysis.

1614.1.8 ASCE 7, 12.12.4. Modify ASCE 7 Section 12.12.4 to read as follows:

12.12.4 Deformation Compatibility for Seismic Design Category D through F. For structures assigned to Seismic Design Category D, E, or F, every structural component not included in the seismic force-resisting system in the direction under consideration shall be designed to be adequate for the gravity load effects and the seismic forces resulting from displacement to the design story drift (Δ) as determined in accordance with Section 12.8.6 (see also Section 12.12.1).

EXCEPTION: Reinforced concrete frame members not designed as part of the seismic force-resisting system shall comply with Section 21.9 of ACI 318.

Where determining the moments and shears induced in components that are not included in the seismic force-resisting system in the direction under consideration, the stiffening effects of adjoining rigid structural and nonstructural elements shall be considered and a rational value of member and restraint stiffness shall be used.

When designing the diaphragm to comply with the requirements stated above, the return walls and fins/canopies at entrances shall be considered. Seismic compatibility with the diaphragm shall be provided by either seismically isolating the element or by attaching the element and integrating its load into the diaphragm.

18.24.130 CBC Section 1702 amended – Definition.

Section 1702 of Chapter 2 of the 2007 California Building Code is

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amended by amending the reference to “Sections 109, Appendix Chapter 1” in the definition of “structural observation” to read “Chapter 18.16 Inspections”.

18.24.140 CBC Section 1704.1 amended – Special inspections, general.

Section 1704.1 of the 2007 California Building Code is amended to read as follows:

1704.1 General. Where application is made for construction as described in this Section, the owner or the registered design professional in responsible charge acting as the owner’s agent shall employ one or more special inspectors to provide inspections during construction on the types of work listed under Section 1704. The special inspector shall be a qualified person who shall demonstrate competence, to the satisfaction of the Building Official, for inspection of the particular type of construction or operation requiring special inspection. These inspections are in addition to the inspections specified in Chapter 18.16 Inspections.

EXCEPTIONS:

1. Special inspections are not required for work of a minor nature or as warranted by conditions in the jurisdiction as approved by the Building Official.

2. Special inspections are not required for building components unless the design involves the practice of professional engineering or architecture as defined by applicable state statutes and regulations governing the professional registration and certification of engineers or architects.

3. [HCD 1] The provisions of Health and Safety Code Division 13, Part 6 and the California Code of Regulations, Title 25, Division 1, Chapter 3, commencing with Section 3000, shall apply to the construction and inspection of factory-built housing as defined in Health and Safety

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Code Section 19971.

18.24.145 CBC Section 1704.1.1 amended – Statement of special inspections.

Section 1704.1.1 of the 2007 California Building Code is amended by amending the reference to "Section 106.1, Appendix Chapter 1" to read "Section 18.12.050".

18.24.150 CBC Section 1704.4 amended – Concrete construction.

Section 1704.4 of the 2007 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 in height 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

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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. Not adopted.

5. Concrete patios, driveways and sidewalks, on grade.

18.24.160 CBC Section 1704.8 amended – Connection grade beam.

Section 1704.8 of the 2007 California Building Code is amended to read as follows:

1704.8 Pile foundation and connecting grade beams. Special inspections shall be performed during installation and testing of pile foundations as required by Table 1704.8. The approved soils report, required by Section 1802.2, and the documents prepared by the registered design professional in responsible charge shall be used to determine compliance. Special inspections for connecting grade beams shall be in accordance with Section 1704.4.

18.24.170 CBC Section 1709.1 amended--Structural observations, general.

Section 1709.1 of the 2007 California Building Code is amended to read as follows:

1709.1 General. Where required by the provisions of Section 1709.2 or 1709.3 the owner shall employ the registered design professional in responsible charge for the structural design, or another registered design professional designated by the registered design professional in responsible charge for the structural design to perform structural observations as defined in Section 1702.

The owner or owner's representative shall coordinate and call a preconstruction meeting between the registered design professional in responsible charge for the structural design, structural observer,

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contractor, 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'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.

18.24.180 CBC Section 1709.2 amended – Structural observations, exception.

Section 1709.2 of the 2007 California Building Code is amended to read as follows:

1709.2 Structural observations for seismic resistance. Structural observations shall be provided for those structures included in 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 Section 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 Section 1604.5 and a lateral design is required for the

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structure or portion thereof.

EXCEPTION: One-story wood framed Group R-3 and Group U Occupancies less than 2000 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 in responsible charge of the design.

5. When such observation is specifically required by the Building Official.

18.24.185 CBC Section 1711.1 amended--Alternative test procedure, general.

Section 1711.1 of Chapter 17 of the 2007 California Building Code is amended by amending the reference to "Sections 104.11, Appendix Chapter 1" to read "Section 18.04.090."

18.24.190 CBC Section 1805.1 amended--Footings and foundations, general.

Section 1805.1 of the 2007 California Building Code is amended to read as follows:

1805.1 General. Footings and foundations shall be designed and constructed in accordance with Sections 1805.1 through 1805.9. Footings and foundations shall be built on undisturbed soil, compacted fill material or controlled low-strength material (CLSM). Compacted fill material shall be placed in accordance with Section 1803.5. CLSM shall be placed in accordance with Section 1803.6.

The top surface of footings shall be level. The bottom surface of footings is 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). This stepping requirement shall also

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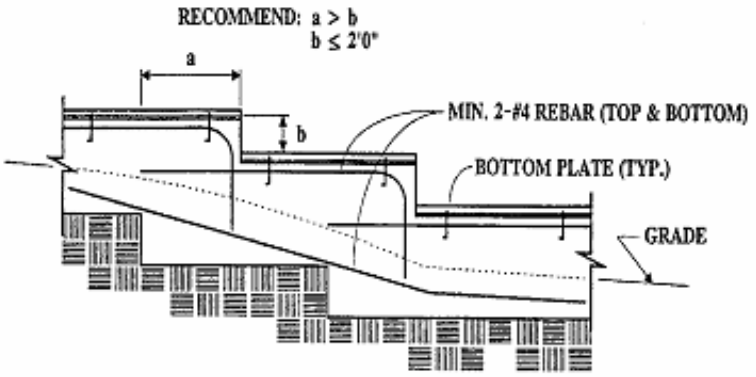
apply to the top surface of grade beams supporting walls. Footings shall be reinforced with four 1/2-inch diameter (12.7 mm) deformed reinforcing bars. Two bars shall be place at the top and bottom of the footings as shown in Figure 1805.1.

Figure 1805.1



STEPPED FOUNDATIONS

18.24.200 CBC table 1805.4.2 amended--Footings supporting walls of light-framed construction.

Table 1805.4.2 of the 2007 California Building Code is amended to read as follows:

TABLE 1805.4.2
FOOTINGS SUPPORTING WALLS OF LIGHT-FRAMED 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 91.1805.2
b. The ground under the floor is permitted to be excavated to the elevation of the top of the footing.
c. *Not adopted.*
d. See Section 1908 for additional requirements for footings of structures assigned to Seismic Design Category C, D, E or F.
e. For thickness of foundation walls, see Section 91.1805.5
f. Footings are permitted to support a roof in addition to the stipulated number of floors. Footings supporting roof only shall be as required for supporting one floor.

18.24.201 CBC Section 1805.4.5 amended – Timber footings.

Delete Section 1805.4.5 of the 2007 California Building code and

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replace with the following:

1805.4.5 Timber footings. Not adopted.

18.24.202 CBC Section 1805.4.6 amended – Wood foundations.

Delete Section 1805.4.6 of the 2007 California Building code and replace with the following:

1805.4.6 Wood foundations. Not adopted.

18.24.210 CBC Section 1805.5 amended – Foundation walls.

Delete Section 1805.5 of the 2007 California Building code and replace with the following:

1805.5 Foundation walls. Concrete and masonry foundation walls shall be designed in accordance with Chapter 19 or 21.

18.24.220 CBC Section 1908.1 amended – Modification to ACI 318.

Section 1908.1 of the 2007 California Building Code is amended to read as follows:

1908.1 General. The text of ACI 318 shall be modified as indicated in Sections 1908.1.1 through 1908.1.21.

1908.1.15 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.

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(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.

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.

1908.1.17 ACI 318, Section 14.8. Modify ACI 318 Section 14.8.3 and 14.8.4 replacing equation (14-7), (14-8) and (14-9).

1. Modify equation (14-7) of ACI 318 Section 14.8.3 as follows:

I_{cr} shall be calculated by Equation (14-7), and M_a shall be obtained by iteration of deflections.

$$I_{cr} = \frac{E_s}{E_c}\left(A_s + \frac{P_u}{f_y}\frac{h}{2d}\right)(d-c)^2 + \frac{l_w c^3}{3} \qquad (14\text{-}7)$$

and the value E_s/E_c shall not be taken less than 6.

2. Modify ACI 318 Sec, 14.8.4 as follows:

14.8.4 – Maximum out-of-plane deflection, Δ_s, due to service loads, including PΔ effects, shall not exceed $l_c/150$.

If M_a, maximum moment at mid-height of wall due to service lateral and eccentric loads, including PΔ effects, exceed ($^2/_3$) M_{cr}, Δ_s shall be calculated by Equation (14-8):

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$$\Delta_s = \frac{2}{3}\Delta_{cr} + \frac{M_a - \frac{2}{3}M_{cr}}{M_n - \frac{2}{3}M_{cr}}\left(\Delta_n - \frac{2}{3}\Delta_{cr}\right) \qquad (14\text{-}8)$$

If M_a does not exceed ($^2/_3$) M_{cr}, Δ_s shall be calculated by Equation (14-9):

$$\Delta_s = \left(\frac{M_a}{M_{cr}}\right)\Delta_{cr} \qquad (14\text{-}9)$$

where:

$$\Delta_{cr} = \frac{5M_{cr}l_c^2}{48E_cI_g}$$

$$\Delta_n = \frac{5M_nl_c^2}{48E_cI_{cr}}$$

1908.1.18 ACI 318, Section 21.4.4.1. Modify ACI 318 Section 21.4.4.1 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 21.4.4.1, Items (a) through (c), over the full height of the member.

1908.1.19 ACI 318, Section 21.4.4. Modify ACI 318 by adding Section 21.4.4.7 as follows:

21.4.4.7 – 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 21.3.4.1 and 21.4.5.1 for all the beams framing into the column above the level under consideration, transverse reinforcement as specified in ACI 318 Sections 21.4.4.1 through 21.4.4.3 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

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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.

1908.1.20 ACI 318, Section 21.7.4. Modify ACI 318 by adding Section 21.7.4.6 as follows:

21.7.4.6 – 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 Section 1631.2, Item 4 ACI 318 Section 21.11.

1908.1.21 ACI 318, Section 21.9.4. Modify ACI 318 Section 21.9.4 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.

18.24.230 New CBC Section 2205.4 – Modifications to AISC 341.

Section 2205.4 is added to Chapter 22 of the 2007 California Building Code to read as follows:

2205.4 Modifications to AISC 341.

2205.4.1 Part I, Structural Steel Building Provisions Modifications.

2205.4.1.1 Part I, Section 13, Special Concentrically Braced Frames (SCBF) Modifications.

2205.4.1.1.1 AISC 341, Part I, 13, Members. Add a new Section as follows:

AISC 341, 13.2f – Member Types

The use of rectangular HSS are not permitted for bracing members, unless filled solid with cement grout having a minimum compressive strength of 3000 psi (20.7 MPa) at 28 days. The effects of composite

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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.

18.24.240 CBC Section 2305.2.5 amended – Rigid diaphragms.

Section 2305.2.5 of the 2007 California Building Code is amended to read as follows:

2305.2.5 Rigid Diaphragms. Design of structures with rigid diaphragms shall conform to the structure configuration requirements of Section 12.3.2 of ASCE 7 and the horizontal shear distribution requirements of Section 12.8.4 of ASCE 7.

Wood structural panel diaphragms shall not be considered as transmitting lateral forces by rotation.

Rigid wood diaphragms are permitted to cantilever past the outermost supporting shear wall (or other vertical resisting element) a length, l, of not more than 25 feet (7620 mm) or two-thirds of the diaphragm width, w, whichever is smaller. Figure 2305.2.5(2) illustrates the dimensions of l and w for a cantilevered diaphragm.

18.24.250 New CBC Section 2305.3.7.1 – Hold-down connectors.

Section 2305.3.7.1 is added to Chapter 23 of the 2007 California Building Code to read as follows:

2305.3.7.1 Hold-down connectors. Hold-down connectors shall be designed to resist shear wall overturning moments using approved cyclic load values or 75 percent of the allowable earthquake load values that do not consider cyclic loading of the product. Connector bolts into wood framing 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-downs shall be re-tightened just prior to covering the wall framing.

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18.24.260 New CBC Section 2305.3.12 – Quality of nails.

Section 2305.3.12 is added to Chapter 23 of the 2007 California Building Code to read as follows:

2305.3.12 Quality of Nails. 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. No clipped head or box nails 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.

18.24.270 CBC Section 2306.3.1 amended – Wood structural panel diaphragms.

Sections 2306.3.1 of the 2007 California Building Code are amended to read as follows:

2306.3.1 Wood structural panel diaphragms. Wood structural panel diaphragms are permitted to resist horizontal forces using the allowable shear capacities set forth in Table 2306.3.1 or 2306.3.2.

Wood structural panel diaphragms using staples as fasteners shall not be permitted for structures assigned to Seismic Design Category D, E, or F.

EXCEPTION: Staples may be used for wood structural panel diaphragm when the allowable shear values are substantiated by cyclic testing and approved by the Building Official.

18.24.275 New CBC table 2306.3.1 and table 2306.3.2 - Allowable shear for wood structural panel diaphragms.

Delete Table 2306.3.1 and Table 2306.3.2 of the 2007 California Building Code and replace with the following:

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TABLE 2306.3.1
ALLOWABLE SHEAR (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL DIAPHRAGMS WITH FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINE[a] FOR WIND OR SEISMIC LOADING[h]

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 [g] (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 ½ [c]	2[c]	Case 1 (No unblocked edges or continuous joints parallel to load)	All other configurations (Cases 2, 3, 4, 5 and 6)
					Fastener spacing (inches) at other panel edges (Cases 1,2,3 and 4)[b]					
					6	6	4	3		
Structural I Grades	6d[e] (2" x 0.113")	1-1/4	5/16	2	185	250	375	420	165	125
				3	210	280	420	475	185	140
	8d (2 ½" x 0.131")	1-3/8	3/8	2	270	360	530	600	240	180
				3	300	400	600	675	265	200
	10d[d] (3" x 0.148")	1-1/2	15/32	2	320	425	640	730	285	215
				3	360	480	720	820	320	240
Sheathing, single floor and other grades covered in DOC PS1 and PS2	6d[e] (2" x 0.113")	1-1/4	5/16	2	170	225	335	380	150	110
				3	190	250	380	430	170	125
	6d[e] (2" x 0.113")	1-1/4	3/8	2	185	250	375	420	165	125
				3	210	280	420	475	185	140
	8d (2 ½" x 0.131")	1 3/8		2	240	320	480	545	215	160
				3	270	360	540	610	240	180
	8d (2 ½" x 0.131")	1 3/8	7/16	2	255	340	505	575	230	170
				3	285	380	570	645	255	190
	8d (2 ½" x 0.131")	1 3/8	15/32	2	270	360	530	600	240	180
				3	300	400	600	675	265	200
	10d[d] (3" x 0.148")	1 1/2		2	290	385	575	655	255	190
				3	324	430	650	735	290	215
	10d[d] (3" x 0.148")	1 1/2	19/32	2	320	425	640	730	285	215
				3	360	480	720	820	320	240

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

a. For framing of other species: (1) Find specific gravity for species of lumber in AF&PA NDS. (3) 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. Space fasteners maximum 12 inches o.c. along intermediate framing members (6 inches o.c. where supports are spaced 48 inches o.c.).
c. Framing at adjoining panel edges shall be 3 inches nominal or *thicker*, and nails shall be staggered where nails are spaced 2 inches o.c. or 2 ½ inches o.c.
d. 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 nails having penetration into framing of more than 1 ½ inches and (2) nails are spaced 3 inches o.c. or less.
e. 8d is recommended minimum for roofs due to negative pressures of high winds.
f. *Not adopted.*
g. The minimum nominal width of framing members not located at boundaries or adjoining panel edges shall be 2 inches.
h. 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 2306.3.2
ALLOWABLE SHEAR (POUNDS PER FOOT) FOR WOOD STRUCTURAL PANEL BLOCKED DIAPHRAGMS UTILIZING MULTIPLE ROWS OF FASTENERS (HIGHT LOAD DIAPHRAGMS) WITH FRAMING OF DOUGLAS FIR-LARCH OR SOUTHERN PINE[a] FOR WIND OR SEISMIC LOADING[b,g,h]

PANEL GRADE[c]	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)	LINES OF FASTENERS	BLOCKED DIAPHRAGMS			
						Cases 1 and 2[d]			
						Fastener Spacing Per Line at Boundaries (inches)			
						4		2-1/2	
						Fastener Spacing Per Line at Other Panel Edges (inches)			
						6	4	4	3
Structural I Grades	10d common nails	1-1/2	5/16	3	2	605	815	875	1150
				4	2	700	915	1005	1290
				4	3	875	1220	1285	1395
			3/8	3	2	670	880	965	1255
				4	2	780	990	1110	1440
				4	3	965	1320	1405	1790
			15/32	3	2	730	955	1050	1365
				4	2	855	1070	1210	1565
				4	3	1050	1430	1525	1800
Sheathing, single floor and other grades covered in DOC PS1 and PS2	10d common nails	1-1/2	15/32	3	2	525	725	765	1010
				4	2	605	815	875	1105
				4	3	765	1085	1130	1195
			19/32	3	2	650	860	935	1225
				4	2	755	965	1080	1370
				4	3	935	1290	1365	1485
			23/32	3	2	710	935	1020	1335
				4	2	825	1050	1175	1445
				4	3	1020	1400	1480	1565

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

a. For framing of other species: (1) Find specific gravity for species of lumber in AF&PA NDS. (3) 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 maximum 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 2306.3.1. The values shown are applicable to Cases 3, 4, 5 and 6 as shown in Table 2306.3.1, 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. *Not adopted.*
g. High load diaphragms shall be subject to special inspection in accordance with Section 1704.6.1.
h. 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.

18.24.280 CBC Section 2306.4.1 amended – Wood structural panel shear walls.

Sections 2306.4.1 of the 2007 California Building Code are amended to read as follows:

2306.4.1. Wood structural panel shear walls. The allowable shear capacities for wood structural panel shear walls shall be in accordance with Table 2306.4.1. These capacities are permitted to be increased 40 percent for wind design. Wood shear walls shall be constructed of wood structural panels and not 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 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 using staples as fasteners shall not be permitted for 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.

Any wood structural panel sheathing used for diaphragms and shear walls that are part of the seismic-force-resisting system shall be

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applied directly to framing members.

EXCEPTION: Wood structural panel sheathing in a horizontal 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.

18.24.290 New CBC table 2306.4.1 – Allowable shear for wood structural panel shear walls.

Delete Table 2306.4.1 of the 2007 California Building Code and replace with the following:

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TABLE 2306.4.1
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, l, j, l, *m, n*]

PANEL GRADE	MINIMUM NOMINAL PANEL THICKNESS (inch)	MINIMUM FASTENER PENETRATION IN FRAMING (inches)	ALLOWABLE SHEAR VALUE FOR SEISMIC FORCES PANELS APPLIED DIRECTLY TO FRAMING					ALLOWABLE SHEAR VALUE FOR WIND FORCES PANELS APPLIED DIRECTLY TO FRAMING				
			NAIL (common) size	Fastener spacing at panel edges (inches)				NAIL (common) size	Fastener spacing at panel edges (inches)			
				6	4	3	2[e]		6	4	3	2[e]
Structural I Sheathing	3/8	1-3/8	8d (2½"x0.131" common)	200	200	200	200	8d (2½"x0.131" common)	230[d]	360[d]	460[d]	610[d]
	7/16	1-3/8	8d (2½"x0.131" common)	255	395	505	670	8d (2½"x0.131" common)	255[d]	395[d]	505[d]	670[d]
	15/32	1-3/8	8d (2½"x0.131" common)	280	430	550	730	8d (2½"x0.131" common)	280	430	550	730
		1-1/2	10d (3"x0.148" common)	340	510	665[f]	870	10d (3"x0.148" common)	340	510	665[f]	870
Sheathing, plywood siding[g] except Group 5 Species	3/8	1-1/4	6d (2"x0.113" common)	200	200	200	200	6d (2"x0.113" common)	200	300	390	510
		1-3/8	8d (2½"x0.131" common)	200	200	200	200	8d (2½"x0.131" common)	220[d]	320[d]	410[d]	530[d]
	7/16	1-3/8	8d (2½"x0.131" common)	240	350	450	585	8d (2½"x0.131" common)	240[d]	350[d]	450[d]	585[d]
	15/32	1-3/8	8d (2½"x0.131" common)	260	380	490	640	8d (2½"x0.131" common)	260	380	490	640
		1-1/2	10d (3"x0.148" common)	310	460	600[f]	770	10d (3"x0.148" common)	310	460	600[f]	770
	19/32	1-1/2	10d (3"x0.148" common)	340	510	665[f]	870	10d (3"x0.148" common)	340	510	665[f]	870
			Nail Size (galvanized casing)					Nail Size (galvanized casing)				
	3/8	1-3/8	8d (2½"x0.113")	160	200	200	200	8d (2½"x0.113")	160	240	310	410

For SI: 1 inch = 25.4 mm, 1 foot = 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. (3) 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. 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.

c. 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.

d. 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.

e. 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.

f. 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.

g. Values apply to all-veneer plywood. Thickness at point of fastening on panel edges governs shear values.

h. 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 on each side shall be staggered.

i. In Seismic Design Category D, E or F, 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 in all cases. See Section 2305.3.11 for sill plate size and anchorage requirements.

j. Galvanized nails shall be hot dipped or tumbled.

k. *Not adopted.*

l. 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.

m. [DSA-SS & OSHPD 1, 2 and 4] Refer to Section 2305.2.4.2, which requires any wood structural panel sheathing used for diaphragms and shear walls that are part of the seismic-force-resisting system to be applied directly to framing members.

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

18.24.300 CBC Section 2306.4.5 amended – Shear walls sheathed with other materials.

Section 2306.4.5 of the 2007 California Building Code is amended to read as follows:

2306.4.5 Shear walls sheathed with other materials. Shear wall capacities for walls sheathed with lath, plaster or gypsum board shall be in accordance with Table 2306.4.5. Shear walls sheathed with lath, plaster or gypsum board shall be constructed in accordance with Chapter 25 and Section 2306.4.5.1. Walls resisting seismic loads shall be subject to the limitations in Section 12.2.1 of ASCE 7. The allowable shear values shown in Table 2306.4.5 for material in Category 1 is limited to 90 pound per foot (1.31 kN/m); materials in Category 2 thru 4 are limited to 30 pound per foot (438 N/m). Shear walls sheathed with lath, plaster or gypsum board shall not be used below the top level in a multi-level building.

Shear walls sheathed with other materials using staples as fasteners shall not be permitted for structures assigned to Seismic Design Category D, E, or F.

EXCEPTION: Staples may be used for shear walls sheathed with other materials when the allowable shear values are substantiated by cyclic testing and approved by the Building Official.

18.24.310 New CBC table 2306.4.5 – Allowable shear for shear walls of lath and plaster or gypsum board.

Delete Table 2306.4.5 of the 2007 California Building Code and replace with the following:

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TABLE 2306.4.5
ALLOWABLE SHEAR FOR WIND OR SEISMIC FORCES FOR SHEAR WALLS OF LATH AND PLASTER OR GYPSUM BOARD WOOD FRAMED WALL ASSEMBLIES

TYPE OF MATERIAL	THICKNESS OF MATERIAL	WALL CONSTRUCTION	FASTENER SPACING[b] MAXIMUM (inches)	SHEAR VALUE[A,E] (PLF)		MINIMUM FASTENER SIZE[c,d,j,k,l]
				Seismic[l]	Wind	
1. Expanded metal, or woven wire lath and portland cement plaster	7/8"	Unblocked	6	90	180	No. 11 gage, 1-1/2" long, 7/16" head
2. Gypsum lath, plain or perforated	3/8" lath and 1/2" plaster	Unblocked	5	30	100	No. 13 gage, 1-1/8" long, 19/64" head, plasterboard nail 0.120" Nail, min. 3/8" head, 1-1/4" long
3. Gypsum sheathing	1/2" x 2' x 8'	Unblocked	4	30	75	No. 11 gage, 1-3/4" long, 7/16" head, diamond-point, galvanized
	1/2" x 4'	Blocked[f]	4	30	175	
		Unblocked	7	30	100	
	5/8" x 4'	Blocked	4" edge/ 7" field	30	200	6d galvanized 0.120" Nail, min. 3/8" head, 1-3/4" long
4. Gypsum board, gypsum veneer base or water-resistant gypsum backing board	1/2"	Unblocked[f]	7	30	75	5d cooler (1-5/8" lx 0.086") or wallboard 0.120" Nail, min. 3/8" head, 1-1/2" long
		Unblocked[f]	4	30	110	
		Unblocked	7	30	100	
		Unblocked	4	30	125	
		Blocked[g]	7	30	125	
		Blocked[g]	4	30	150	
		Unblocked	8/12[h]	30	60	No. 6- 1-1/4" screws[i]
		Blocked[g]	4/16[h]	30	160	
		Blocked[g]	4/12[h]	30	155	
		Blocked[f, g]	8/12[h]	30	70	
		Blocked[g]	6/12[h]	30	90	
	5/8"	Unblocked[f]	7	30	115	6d cooler (1-7/8" x 0.092") or wallboard 0.120" Nail, min. 3/8" head, 1-3/4" long
			4	30	145	
		Blocked[g]	7	30	145	
			4	30	175	
		Blocked[g] Two ply	Base ply: 9 Face ply: 7	30	250	Base ply-6d cooler (1-7/8" x 0.092") or wallboard 1-3/4" x 0.120" Nail, min. 3/8" head Face ply-8d cooler (2-3/8" x 0.113") or wallboard 0.120" Nail, min. 3/8" head, 2-3/8" long
		Unblocked	8/12[h]	30	70	No. 6- 1-1/4" screws[i]
		Blocked[g]	8/12[h]	30	90	

See Footnote

Table 2306.4.5 Footnote:

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

a. These shear walls shall not be used to resist loads imposed by masonry or concrete construction (see Section 2305.1.5). Values shown are for short-term loading due to wind or seismic loading. Walls resisting seismic loads shall be subject to the limitations in Section 12.2.1 of ASCE 7. Values shown shall be reduced 25 percent for normal loading.

b. Applies to fastening at studs, top and bottom plates and blocking.

c. Alternate fasteners are permitted to be used if their dimensions are not less than the specified dimensions. Drywall screws are permitted to substitute for the 5d (1-5/8" x 0.086"), and 6d (1-7/8" x 0.092")(cooler) nails listed above, and No. 6 1-1/4 inch Type S or W screws for 6d (1-7/8" x 0.092")(cooler) nails.

d. For properties of cooler nails, see ASTM C 514.

e. Except as noted, shear values are based on maximum framing spacing of 16 inches on center.

f. Maximum framing spacing of 24 inches on center.

g. All edges are blocked, and edge fastening is provided at all supports and all panel edges.

h. First number denotes fastener spacing at the edges; second number denotes fastener spacing at intermediate framing members.

i. Screws are Type W or S.

j. *Not adopted.*

k. *Not adopted.*

l. This construction shall not be used below the top level of wood construction in a multi-level building.

18.24.320 CBC Section 2308.3.4 amended – Braced wall line support.

Section 2308.3.4 of the 2007 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.

18.24.330 CBC Section 2308.12.1 amended – Number of stories.

Section 2308.12.1 of the 2007 California Building Code is amended to read as follows:

2308.12.1 Number of stories. Structures of conventional light-frame construction shall not exceed one story in height in Seismic Design Category D or E.

18.24.340 CBC Section 2308.12.2 amended – Concrete or masonry.

Section 2308.12.2 of the 2007 California Building Code is amended to read as follows:

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

EXCEPTION: 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).

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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 Division 14 and shall not extend more than 5 feet (1524 mm) above the first story finished floor.

18.24.350 CBC Section 2308.12.4 – Braced wall line sheathing.

Section 2308.12.4 of the 2007 California Building Code is 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 $1^1/_2$ inch (38 mm)] or larger members, spaced a maximum of 16 inches on center. Nailing shall be minimum 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.

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.

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2. The roof and three enclosing walls are solid sheathed with ½-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.

18.24.360 CBC table 2308.12.4 amended – Wall bracing in seismic design categories D and E.

Table 2308.12.4 of the 2007 California Building Code is amended to read as follows:

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	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.

a. Minimum length of panel bracing of one face of the wall for S-W sheathing shall be at least 4'-0" long or both faces of the wall for G-P sheathing shall be at least 8'-0" long; h/w ratio shall not exceed 2:1. For S-W panel bracing of the same material on two faces of the wall, the minimum length is permitted to be one-half the tabulated value but the h/w ratio shall not exceed 2:1 and design for uplift is required.

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

c. Nailing as specified below shall occur at all panel edges at studs, at top and bottom plates and, where occurring, at blocking:
For 1/2-inch gypsum board, 5d (0.113 inch diameter) cooler nails at 7 inches on center;
For 5/8-inch gypsum board, No 11 gage (0.120 inch diameter) cooler nails at 7 inches on center;
For gypsum sheathing board, 1-3/4 inches long by 7/16-inch head, diamond point galvanized nails at 4 inches on center;
For gypsum lath, No. 13 gage (0.092 inch) by 1-1/8 inches long, 19/64-inch head, plasterboard at 5 inches on center;
For Portland cement plaster, No. 11 gage (0.120 inch) by $1^1/_2$ inches long, $^7/_{16}$- inch head at 6 inches on center;

d. S-W sheathing shall be 15/32" thick nailed with 8d nails, at 6:6:12.

18.24.370 CBC Section 2308.12.5 amended – Attachment of sheathing.

Section 2308.12.5 of the 2007 California Building Code is amended to read as follows:

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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 Table 2304.9.1. Wall sheathing shall not be attached to framing members by adhesives.

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 inch (6096 mm) intervals along the top plate of discontinuous vertical framing.

18.24.380 CBC Section 2503.1 amended – Inspection.

Section 2503.1 of Chapter 25 of the 2007 California Building Code is amended by amending the reference to "Sections 109.3.5, Appendix Chapter 1" to read "Section 18.16.040.B.5."

18.24.389 CBC Section H101.2 of appendix H amended – Signs exempt from permits.

Section H101.2 of Appendix H of the 2007 California Building Code is amended by deleting Item 4.

18.24.390 CBC Section H105.2 of appendix H amended – Permits, drawings and specifications.

Section H105.2 of Appendix H of the 2007 California Building Code is amended to read as follows:

H105.2 Permits, drawings and specifications. Where a permit is required, as provided in Section 18.12.010, construction documents shall be required. These documents shall show the dimensions, material and required details of construction, including loads, stresses and anchors.

18.24.391 CBC Section H110.1 of appendix H amended – General.

Section H110.1 of Appendix H of the 2007 California Building Code

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is amended by deleting the last two sentences.

18.24.400 CBC Section J104.1 of appendix J amended – Submittal requirements.

Section J104.1 of Appendix J of the 2007 California Building Code is amended by amending the reference to "Sections 105.3, Appendix Chapter 1" to read "Section 18.12.020."

18.24.410 CBC Section J104.2 of appendix J amended – Site plan requirements.

Section J104.1 of Appendix J of the 2007 California Building Code is amended by amending the reference to "Sections 106, Appendix Chapter 1" to read "Section 18.12.050."

18.24.420 CBC Section J105.1 of appendix J amended – General.

Section J105.1 of Appendix J of the 2007 California Building Code is amended by amending the reference to "Sections 109, Appendix Chapter 1" to read "Chapter 18.16 Inspections."

18.24.430 Chapter 17 added to Uniform Housing Code--Prohibited uses and maintenance.

CHAPTER 17

PROHIBITED USES AND MAINTENANCE

Sec. 1701--Prohibited Uses--

(a) Cooking. It shall be unlawful for any person to cook or prepare food or to permit another person to cook or prepare food in any bath, shower, slop sink, toilet room, water closet compartment, any room not designed and intended to be used as a kitchen, or in any other portion of a building in which the cooking or preparation of food is detrimental to the health of the occupants or the proper sanitation of the building.

(b) Sleeping--It shall be unlawful for any person to use or to permit another person to use any of the following portions of a building for

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sleeping purposes:

1. kitchen, hallway, water closet, bath, cellar, shower compartment or slop sink room.

2. any other room or place which does not comply with the provisions of this Code as a sleeping room or in which sleeping is dangerous to life or health.

Sec. 1702--Maintenance and Repair--

(a) Maintenance. Every building shall be maintained in good repair.

(b) Roof. The roof of every building shall be kept watertight and all storm or casual water shall be properly drained and conveyed from the roof to a storm drain or street gutter in accordance with other applicable provisions of this Part.

(c) Drainage. All portions of a lot about a building, including the yards, areaways, vent shafts, court and passageways, shall be graded and drained to efficiently carry the water away from the building.

(d) Surfacing, etc. If the Building Official finds it necessary for the protection of the health and safety of the occupants, or for the proper sanitation of a dwelling, apartment house or hotel, it may require that the yards, areaways, vent shafts, court, passageways, or other parts of the lot surrounding the building be graveled, or properly paved and surfaced with concrete, asphalt or similar materials.

(e) Painting of Room Walls and Ceilings. The walls and ceilings of every room in a dwelling, apartment house or hotel shall be finished, sealed, coated or covered in an approved manner. Approved materials shall be applied as often as may be necessary to maintain the walls and ceilings in a clean and sanitary condition.

(f) Painting of Court and Shaft Walls. Unless built of light-

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colored materials, the walls of courts and shafts shall be painted in a light color, or shall be whitewashed. The paint or whitewash shall be applied as often as may be necessary to maintain the walls in a light color.

(g) Wallpaper. Not more than two thicknesses of wallpaper shall be placed upon any wall, partition, or ceiling of any room in any dwelling, apartment house or hotel. If any wall, partition, or ceiling with two thicknesses of wallpaper in any such room is to be repapered, the old wallpaper shall first be removed. Any wallpaper which has become loose or dilapidated shall be removed and the surface repapered, calcimined or painted.

(h) Painting of Wallpaper. Paint or calcimine over wallpaper is permissible if the plaster under the wallpaper is in good condition.

(i) Screening. Whenever necessary for the health of the occupants, or for the proper sanitation or cleanliness of any building, acceptable mosquito screening shall be provided for each exterior door, window, or other opening in the exterior walls of the buildings.

(j) Garbage Receptacle Compartment. Every residential building shall be provided with facilities adequate for the storing of all garbage and waste, either within an approved compartment or receptacles. These facilities shall be maintained in a clean and sanitary condition.

(k) Fences. All fences shall be maintained in good repair and shall be kept straight, uniform and structurally sound. Wooden fences shall be either painted or stained or otherwise treated or sealed in an approved manner to prevent their becoming a nuisance from weathering or deterioration.

(l) Sanitation. Each room, hallway, passageway, stairway, wall, partition, ceiling, floor, skylight, glass window, door carpet, rug, matting,

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window curtain, water closet, compartment, or room, toilet room, bathroom, slop sink room, washroom, plumbing fixtures, drain, roof, closet, cellar, basement, yard, court, lot and the premises of every building shall be kept in every part clean, sanitary, and free from all accumulation of debris, abandoned or inoperable motor vehicles and vehicle parts, filth, rubbish, garbage, rodents, insects and other vermin, excessive vegetation and other offensive matter.

(m) Dangerous Articles. No article that is dangerous or detrimental to life or to the health of the occupants, including any feed, hay, straw, excelsior, cotton, paper stock, rags, junk, or any other material that may create a fire hazard, shall be kept, stored or handled in any part of a dwelling, apartment house or hotel, or on the lot on which such building is located.

(n) Caretaker. A janitor, housekeeper, or other responsible person shall reside upon the premises and shall have charge of every apartment house in which there are sixteen or more apartments, of every hotel in which there are twelve or more guest rooms, unless the owner of any such apartment house or hotel resides upon said premises. If the owner does not reside upon the premises of any apartment house in which there are more than four but less than sixteen apartments, a notice stating the owner's name and address or the name and address of his agent in charge of the apartment house shall be posted in a conspicuous place on the premises.

(o) Bedding. In every apartment house or hotel, every part of every bed, including mattress, sheets, blankets, and bedding, shall be kept in a clean, dry and sanitary condition, free from filth, urine or other foul matters, and from the infection of lice, bedbugs or other insects. The bed linen of a bed in a hotel shall be changed at least as often as a new

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guest occupies the bed.

Section 6. Chapter 18.28 of the Long Beach Municipal Code is amended in its entirety and restated to read as follows:

CHAPTER 18.28

ELECTRICAL CODE

18.28.010 Adoption.

The City Council adopts and incorporates by reference as though set forth in full in this Chapter, the California Electrical Code, 2007 Edition, and Annex A, B, and C, which is based on, and which amends the provisions of the 2005 National Electrical Code as developed by the National Fire Protection Association, subject to the changes, amendments and modifications to it, and certain provisions of the Long Beach Municipal Code shall constitute and be known as the Long Beach Electrical Code. A copy of the California Electrical Code, printed as a code in book form, shall be on file in the office of the City Clerk.

18.28.020 Application.

The provisions of the model code (the National Electrical Code), which are incorporated into the California Electrical Code, are applicable to all occupancy groups and uses regulated by the model code. The amendments made by the state agencies to the model code and incorporated into the California Electrical Code are applicable only to those occupancies or uses which the state agency making the amendments is authorized to regulate, as listed in Article 89 of the California Electrical Code. The building and safety bureau shall only enforce those amendments made by the following state agencies:

A. The Department of Housing and Community Development (HCD) as specified in Section 89.108 of the 2007 California Electrical

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Code.

B. Division of the State Architect, Access Compliance (DSA/AC) as specified in Section 89.109 of the 2007 California Electrical Code.

C. Office of the State Fire Marshal (SFM) as specified in Section 89.111 of the 2007 California Electrical Code.

D. Office of Statewide Health, Planning and Development (OSHPD 3) as specified in Section 89.110 of the 2007 California Electrical Code.

E. California Energy Commission (CEC) as specified in Section 89.105 of the 2007 California Electrical Code.

Section 7. Section 18.36.010 of the Long Beach Municipal Code is amended to read as follows:

18.36.010 Adoption.

The City Council adopts and incorporates by reference as though set forth in full in this Chapter, the California Mechanical Code and Appendices A, B, C and D, 2007 Edition, which is based on, and which amends the provisions of the 2006 Uniform Mechanical Code as developed by the International Association of Plumbing and Mechanical Officials, subject to the changes, amendments and modifications to the code as set forth in this Chapter. The various parts of the code, the amendments and modifications to it as adopted in this Chapter, and certain provisions of the Long Beach Municipal Code, which shall remain in full force and effect as provided in this Chapter, shall constitute and be known as the Long Beach Mechanical Code. A copy of the California Mechanical Code, printed as a code in book form, shall be on file in the office of the City Clerk.

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Section 8. Section 18.36.015 of the Long Beach Municipal Code is amended to read as follows:

18.36.015 Application.

The provisions of the model code (the Uniform Mechanical Code), which are incorporated into the California Mechanical Code, are applicable to all occupancy groups and uses regulated by the model code. The amendments made by the state agencies to the model code and incorporated into the California Mechanical Code are applicable only to those occupancies or uses which the state agency making the amendments is authorized to regulate, as listed in Chapter 1 of the California Mechanical Code. The Building and Safety Bureau shall only enforce those amendments made by the following state agencies:

A. The Department of Housing and Community Development (HCD) as specified in Section 108 of the 2007 California Mechanical Code.

B. Division of the State Architect, Access Compliance (DSA/AC) as specified in Section 109 of the 2007 California Mechanical Code.

C. Office of the State Fire Marshal (SFM) as specified in Section 111 of the 2007 California Mechanical Code.

D. Office of Statewide Health, Planning and Development (OSHPD 3) as specified in Section 110 of the 2007 California Mechanical Code.

E. California Energy Commission (CEC) as specified in Section 105 of the 2007 California Mechanical Code.

Section 9. Section 18.36.030 of the Long Beach Municipal Code is amended to read as follows:

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18.36.030 Deletions.

Appendix Chapter 1 of the 2007 California Mechanical Code is deleted.

Section 10. Section 18.40.010 of the Long Beach Municipal Code is amended to read as follows:

18.40.010 Adoption.

The City Council adopts and incorporates by reference as though set forth in full in this Chapter, the California Plumbing Code, 2007 Edition, and Appendices A, B, D, and I, which is based on, and which amends the provisions of the 2006 Uniform Plumbing Code as developed by the International Association of Plumbing and Mechanical Officials. This code and certain provisions of the Long Beach Municipal Code which shall remain in full force and effect as provided in this Chapter, shall constitute and be known as the Long Beach Plumbing Code. A copy of the California Plumbing Code, printed as a code in book form, shall be on file in the office of the City Clerk.

Section 11. Section 18.40.020 of the Long Beach Municipal Code is amended to read as follows:

18.40.020 Deletion.

The following parts of the California Plumbing Code, as adopted in Section 18.40.010, are deleted: Chapter 13 - Health Care Facilities and Medical Gas and Vacuum Systems and Appendix Chapter 1 Administration.

Section 12. Section 18.40.022 of the Long Beach Municipal Code is amended to read as follows:

18.40.022 Application.

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The provisions of the model code (the Uniform Plumbing Code), which are incorporated into the California Plumbing Code, are applicable to all occupancy groups and uses regulated by the model code. The amendments made by the state agencies to the model code and incorporated into the California Plumbing Code are applicable only to those occupancies or uses which the state agency making the amendments is authorized to regulate, as listed in Chapter 1 of the California Plumbing Code. The Building and Safety Bureau shall only enforce those amendments made by the following state agencies.

A. The Department of Housing and Community Development (HCD) as specified in Section 108 of the 2007 California Plumbing Code.

B. Division of the State Architect, Access Compliance (DSA/AC) as specified in Section 109 of the 2007 California Plumbing Code.

C. Office of the State Fire Marshal (SFM) as specified in Section 111 of the 2007 California Plumbing Code.

D. Office of Statewide Health, Planning and Development (OSHPD 3) as specified in Section 110 of the 2007 California Plumbing Code.

E. California Energy Commission (CEC) as specified in Section 105 of the 2007 California Plumbing Code.

F. Department of Water Resources (DWR) as specified in Section 113 of the 2007 California Plumbing Code.

Section 13. Section 18.99.010 of the Long Beach Municipal Code is amended as follows:

18.99.010 Purpose

A. The provisions of this Title contain certain changes,

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deletions, modifications and additions to the California Building Code adopted by the City. Chapters and Sections of this Title, including the amendments herein, are considered amendments to the California Building Code, 2007 Edition and Appendices. Some of these changes are administrative in nature in that they do not constitute changes, modifications or additions to the State Building Standards.

B. Pursuant to the California Health and Safety Code Sections 17958.5 and 17958.7, the City Council has, by resolution made specific findings of fact and determinations relative to the unique climatic, geological or topographical conditions existing in Long Beach that necessitate amendment to the various applicable California Building Codes. A copy of said resolution shall be on file with the office of the City Clerk.

Section 14. Chapter 18.69 is added to the Long Beach Municipal Code to read as follows:

CHAPTER 18.69

VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING WOOD FRAME RESIDENTIAL BUILDINGS WITH WEAK CRIPPLE WALLS AND UNBOLTED SILL PLATES

18.69.010 General.

A. Purpose. The provisions of this Chapter are intended to promote public safety and welfare by reducing the risk of earthquake-induced damage to existing wood-framed residential buildings. The voluntary minimum standards contained in this Chapter shall substantially improve the seismic performance of these residential buildings but will not necessarily prevent all earthquake damage. When fully followed, these standards will strengthen the portion of the structure that is most

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vulnerable to earthquake damage.

Prior to 1960, most wood frame residential buildings were built with raised wood floors supported by short wood stud walls known as cripple walls. These cripple walls are typically braced with weak seismic materials such as portland cement plaster or horizontal wood siding. In addition, wood frame buildings built under building codes in effect prior to July 1938 were not required to be bolted to their foundations. Recent earthquakes have shown that if a building has weak cripple walls or is unbolted, it may fall off its foundation even in moderate earthquakes.

Fallen buildings have collapsed, caught fire or needed extensive repairs to restore their occupancy.

This Chapter sets prescriptive standards for strengthening of under floor enclosures, if permitted by the Building Official, without requiring construction documents prepared by a registered design professional licensed by the State of California. This Chapter also provides a design standard for the use of alternate materials or an alternate method of construction in lieu of the prescriptive standards.

Construction documents for strengthening using alternate materials or methods shall be prepared by a registered design professional licensed by the State of California.

B. Scope. The provisions of this Chapter may be applied to light wood frame Group R occupancies, with no more than four (4) dwelling units when they contain one (1) or more of the structural weaknesses specified in Section 18.69.030.

The provisions of this Chapter do not apply to the buildings or elements thereof listed below. These buildings or elements require analysis by a registered design professional licensed by the State of California in accordance with Chapter 16 of the California Building Code or

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other approved standards to determine appropriate strengthening.

1. Buildings with a lateral-force-resisting system using poles or columns embedded in the ground.

2. Cripple walls that exceed four (4) feet in height.

3. Buildings exceeding three (4) stories in height and any three-story building with cripple wall studs exceeding fourteen (14) inches in height.

4. Buildings, or portions thereof, constructed on a concrete slab on grade or constructed on or into a slope steeper than one (1) unit vertical in three (3) units horizontal (33.3% slope).

5. Buildings where the Building Official determines that conditions exist that are beyond the scope of the requirements of this Chapter.

The standard details approved by the Building Official and these prescriptive provisions are not intended to be the only acceptable strengthening methods permitted. Alternate details and methods shall be permitted when approved by the Building Official. Qualified Historical Buildings shall be permitted to use alternate building regulations or deviations from this Chapter in order to preserve their original or restored architectural elements and features. See California Code of Regulations, Title 24, Part 8 (California Historical Building Code) for these standards.

C. Alternative Design Procedures. When analysis by a registered design professional is required or provided for a building within the scope of this Chapter, such analysis shall be in accordance with all requirements of this code except as provided in this Chapter. The design shall provide strengthening for any structural weakness listed in Section 18.69.030 that is at least equivalent to that provided by the prescriptive requirements of this Chapter with respect to strength, deflection and

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capacity. The Building Official may require that sufficient evidence be submitted to substantiate such equivalence. The base shear may be determined in accordance with the following:

$V = 0.1375\ W$ (69-1)

Where:

V = the total design lateral force or shear at the base

W = the total seismic dead load defined in Section 12.7.2 of ASCE 7.

18.69.020 Definitions.

For the purpose of this Chapter, in addition to the applicable definitions, symbols and notations in this code, certain additional terms are defined as follows:

ADHESIVE ANCHOR is a fastener placed in hardened concrete or masonry that derives its holding strength from a chemical adhesive compound placed between the wall of the hole and the embedded portion of the anchor.

ANCHOR SIDE PLATE is a metal plate or plates used to connect a sill plate to the side of a concrete or masonry stem wall.

CRIPPLE WALL is a wood-framed stud wall extending from the top of the foundation to the underside of the lowest floor framing.

EXPANSION ANCHOR is a mechanical fastener placed in hardened concrete or assembled masonry, designed to expand in a self-drilled or pre-drilled hole of a specified size and engage the sides of the hole in one or more locations to develop shear and/or tension resistance to applied loads without grout, adhesive or drypack.

PERIMETER FOUNDATION is a foundation system which is located under the exterior walls of a building.

SNUG-TIGHT is as tight as an individual can torque a nut on a bolt by hand using a wrench with a ten (10) inch long handle and the point at

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which the full surface of the plate washer is contacting the wood member and slightly indents the wood surface.

UNREINFORCED MASONRY includes adobe, burned clay, concrete or sand-lime brick, hollow clay or concrete block, hollow clay tile, rubble, cut stone, and unburned clay masonry walls in which the area of reinforcement is less than fifty (50) percent of the minimum steel ratios required for reinforced masonry.

18.69.030 Structural weaknesses.

For the purpose of this Chapter, structural weaknesses shall be as specified below:

1. Sill plates or floor framing which are supported directly on the ground without an approved foundation system.

2. A perimeter foundation system which is constructed of wood posts supported on isolated pad footings.

3. Perimeter foundation systems that are not continuous.

EXCEPTIONS:

a. Existing single-story exterior walls not exceeding ten (10) feet in length forming an extension of floor area beyond the line of an existing continuous perimeter foundation.

b. Porches, storage rooms and similar spaces not containing fuel burning appliances.

4. A perimeter foundation system which is constructed of unreinforced masonry.

5. Sill plates which are not connected to the foundation or are connected with less than what is required by Section 18.69.040.C.1.

6. Cripple walls that are not braced in accordance with the requirements of Section 18.69.040.D and Table 69-A.

18.69.040 Strengthening requirements

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A. General.

1. Scope. The structural weaknesses noted in Section 18.69.030 shall be strengthened in accordance with the requirements of this Section. Strengthening work shall be allowed to include both new construction and alteration of existing construction. Except as provided herein, all strengthening work and materials shall comply with the applicable provisions of this code. Alternate methods of strengthening shall be allowed provided such systems are designed by a registered design professional and approved by the Building Official.

2. Condition of existing wood materials. All existing wood materials which will be a part of the strengthening work shall be in a sound condition and free from defects which substantially reduce the capacity of the member. Any wood material found to contain fungus infection shall be removed and replaced with new material. Any wood material found to be infested with insects or to have been infested shall be strengthened or replaced with new materials to provide a net dimension of sound wood at least equal to its undamaged original dimension.

3. Floor joists not parallel to foundations. Floor joists framed perpendicular or at an angle to perimeter foundations shall be restrained by either a nominal two (2) inch wide continuous rim joist or a nominal two (2) inch wide full depth blocking between alternate joists in one- and two-story buildings, and between each joist in three-story buildings. Blocking for multistory buildings must occur at each joist space above a braced cripple wall panel.

Existing connections at the top edge of an existing rim joist or blocking need not be verified. The bottom edge connection to either the foundation sill plate or top plate of a cripple wall shall be verified unless a supplemental connection is provided. The minimum existing bottom edge

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connection shall consist of 8d toenails spaced six (6) inches apart for a continuous rim joist or three 8d toenails per block. When this minimum bottom edge connection is not present, or is not verified, a supplemental connection shall be provided.

When an existing continuous rim joist or the minimum existing blocking does not occur, new 1-1/8 inch wood structural panel blocking installed tightly between floor joists and nailed with 10d common nails at 4 inches on center to the sill or wall top plate shall be provided at the inside face of the cripple wall. In lieu of 1-1/8 inch wood structural panel blocking, tight-fitting, full or near full depth two (2) inches nominal width lumber blocking shall be allowed provided it does not split during installation. New blocking is not required where it will interfere with vents or plumbing which penetrates the wall**.**

4. Floor joists parallel to foundations. Where existing floor joists are parallel to the perimeter foundations, the end joist shall be located over the foundation and, except for required ventilation openings, shall be continuous and in continuous contact with any existing foundation sill plate or top plate of the cripple wall. Existing connections at the top edge connection of the end joist need not be verified; however, the bottom edge connection to either the foundation sill plate or the top plate of a cripple wall shall be verified unless a supplemental connection is provided.

The minimum bottom edge connection shall be 8d toenails spaced six (6) inches apart. If this minimum bottom edge connection is not present or is not verified, a supplemental connection shall be provided.

5. Supplemental connections. Supplemental connections shall provide sufficient strength to transfer the seismic forces. Framing anchors of minimum 18 gage steel and twelve (12) approved fasteners may be considered to meet this requirement when spaced thirty-two (32) inches

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on center for one-story buildings, twenty-four (24) inches on center for two-story buildings and sixteen (16) inches on center for three-story buildings.

EXCEPTION: A supplemental connection is not required when:

a. The structural wood panel sheathing extends from the sill plate to the rim joist or blocking above.

b. The floor sheathing is nailed directly into the sill or top plate of the cripple wall.

6. Single top plate ties. When a single top plate exists in the cripple wall, all end joints in the top plate shall be tied. Ties shall be connected to each end of the discontinuous top plate and shall be equal to one of the following:

a. 3 inch by 6 inch by 0.036 inch thick galvanized steel and nailed with six 8d nails at each end.

b. 1-1/2 inches by 12 inch by 0.058 inch galvanized steel nailed with six 16d nails at each end.

c. 2 inch by 4 inch by 12 inch wood blocking nailed with six 16d nails at each end.

B. Foundations.

1. New perimeter foundations. New perimeter foundations shall be provided for structures with the structural weaknesses noted in Items 1 and 2 of Section 18.69.030. Soil investigations or geotechnical studies are not required for this work unless the building shows signs of excessive settlement or creep.

2. Foundation evaluation by a registered design professional. Partial perimeter foundations or unreinforced masonry foundations shall be evaluated by a registered design professional for the force levels noted in Formula (69-1) of this Chapter. Test reports or other substantiating data

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to determine existing foundation material strengths shall be submitted for review. When approved by the Building Official, these foundation systems may be strengthened in accordance with the recommendations included with the evaluation in lieu of being replaced.

EXCEPTION: In lieu of testing existing foundations to determine material strengths and when approved by the Building Official, a new non-perimeter foundation system, designed for the forces noted in Formula (69-1) of this Chapter, may be used to resist all exterior wall lateral forces.

3. Details for new perimeter foundations. All new perimeter foundations shall be continuous and constructed according to the standards for new buildings.

EXCEPTIONS:

a. When approved by the Building Official, the existing clearance between existing floor joists or girders and existing grade below the floor need not comply with Section 2304.11.2.1 of the California Building Code. This exception shall not be permitted when buildings are relocated on new foundations.

b. When approved by the Building Official, and when designed by a registered design professional, partial perimeter foundations may be used in lieu of a continuous perimeter foundation.

C. Foundation sill plate anchorage.

1. Existing perimeter foundations. When the building has an existing continuous perimeter foundation, all perimeter wall sill plates shall be connected to the foundation in accordance with Table 69-A and this Section. Anchors shall be installed with the plate washer installed between the nut and the sill plate. The nut shall be tightened to a snug-tight condition after curing is complete for adhesive anchors and after expansion wedge engagement for expansion anchors.

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The installation of nuts on all anchors shall be subject to verification by the Building Official. Torque testing shall be performed for twenty (25) percent of all adhesive or expansion anchors.

Minimum test values shall be thirty (30) foot-pounds for 1/2 inch and forty (40) foot-pounds for 5/8 inch diameter anchors.

Anchor side plates shall be permitted when conditions prevent anchor installation vertically through the sill plate. Anchor side plates shall be spaced as required for adhesive or expansion anchors but only one anchor side plate is required on individual pieces of sill plate less than thirty-two (32) inches in length. Wood structural panel shims shall be used on sill plates for single plate anchor side plates when the foundation stem wall is from 3/16 inch to 3/4 inch wider than the sill plate. The shim length shall extend a minimum of two (2) inches past each end of the anchor side plate. Two (2) plate anchor side plates shall be used when the total thickness of the required shim exceeds 3/4 inch.

All anchor side plates which use lag or wood screws shall pre-drill the sill plate to prevent splitting as required by Section 2304.9 of the California Building Code.

Lag or wood screws shall be installed in the center of the thickness of the existing sill plate.

Expansion anchors shall not be used in unreinforced masonry or concrete o masonry grout of poor quality. Adhesive anchors shall be required when expansion anchors will not tighten to the required torque or their installation causes surface cracking of the foundation wall.

2. Placement of anchors. Anchors shall be placed within twelve (12) inches, but not less than nine (9) inches, from the ends of sill plates and shall be placed near the center of the stud space closest to the required spacing. New sill plates may be installed in pieces when

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necessary because of existing conditions.

The minimum length of new sill plate pieces shall be thirty (30) inches.

EXCEPTION: Where physical obstructions such as fireplaces, plumbing or heating ducts interfere with the placement of an anchor, the anchor shall be placed as close to the obstruction as possible, but not less than 9 inches from the end of the plate. Center-to-center spacing of the anchors shall be reduced as necessary to provide the minimum total number of anchors required based on the full length of the wall. Center-to-center spacing shall not be less than twelve (12) inches.

3. New perimeter foundations. Sill plates for new perimeter foundations shall be anchored as required by Section 1805.6 of the California Building Code.

D. Cripple Wall Bracing.

1. General. Exterior cripple walls not exceeding four (4) feet in height shall use the prescriptive bracing method listed below. Cripple walls more than four (4) feet in height require analysis by a registered design professional in accordance with Chapter 16 of the California Building Code.

2. Sheathing requirements. Wood structural panel sheathing shall not be less than 15/32 inch thick. When used, plywood panels shall be constructed of five or more plies.

All wood structural panels shall be nailed with 8d common nails spaced 4 inches on center at all edges and at 12 inches on center at each intermediate support with not less than two nails for each stud. Nails shall be driven so that their head or crown is flush with the surface of the sheathing and shall penetrate the supporting member a minimum of 1-1/2 inch. When a nail fractures the surface, it shall be left in place and not

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counted as part of the required nailing. A new 8d nail shall be located within two (2) inches of the discounted nail and hand-driven flush with the sheathing surface.

EXCEPTION: No. 6 × 1-1/2 inch wood screws may be used for sheathing nailing when bracing materials are installed on the interior face of studs and cement plaster or other brittle finishes are on the exterior of the sheathed wall.

All horizontal joints must occur over nominal 2 inch by 4 inch blocking installed with the nominal 4-inch dimension against the face of the plywood. All vertical joints must occur over studs. Vertical joints at adjoining pieces of wood structural panels shall be centered on existing studs such that there is a minimum 1/8 inch between the panels.

Nails shall be placed a minimum of 1/2 inch from the edges of the existing stud. When such edge distance cannot be maintained because of the width of the existing stud, a new stud shall be added adjacent to the existing and connected with 16d common nails at 8 inches on center. A minimum of three such nails shall be provided**.**

3. Distribution and amount of bracing. See Table 69-A for the distribution and amount of bracing required. Bracing for a building with three or more floor levels above cripple wall studs exceeding 14 inches in height must be designed in accordance with Chapter 16 of the California Building Code.

The braced panel must be at least two times the height of the cripple stud wall but not less than 48 inches in width. All panels along a wall shall be nearly equal in length and shall be nearly equally spaced along the length of the wall. Braced panels at ends of walls shall be located as near the end as possible.

Where physical obstructions such as fireplaces, plumbing or

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heating ducts interfere with the placement of cripple wall bracing, the bracing shall then be placed as close to the obstruction as possible. The total amount of bracing required shall not be reduced because of obstructions, but the required length of bracing need not exceed the length of the wall.

Under floor ventilation openings shall be maintained in accordance with Section 1203.3 of the California Building Code. Braced panels may include under floor ventilation openings when the height of the solid portion of the panel meets or 75 percent of the height of the cripple stud wall.

When the minimum amount of bracing prescribed in Table 69-A cannot be installed due to obstructions along any wall, the bracing must be designed by a registered design professional in accordance with Section 18.69.010.C.

4. Stud space ventilation. When bracing materials are installed on the interior face of studs forming an enclosed space between the new bracing and existing exterior finish, each braced stud space must be ventilated. Adequate ventilation and access for future inspection shall be provided by drilling on 2 inch to 3 inch diameter round hole through the sheathing nearly centered between each stud at the top and bottom of the cripple wall. Such holes should be spaced a minimum of 1 inch clear from the sill or top plates. In stud spaces containing sill bolts, the hole shall be located on the center line of the sill bolt but not closer than 1 inch clear from the nailing edge of the sheathing.

When existing blocking occurs within the stud space, additional ventilation holes shall be placed above and below the blocking or the existing block shall be removed and a new nominal 2 inch by 4 inch block installed with the nominal 4 inch dimension against the face of the

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plywood. For stud heights less than 18 inches, only one ventilation hole need be provided.

5. Existing under floor ventilation. Existing under floor ventilation shall not be reduced without providing equivalent new ventilation as close to the existing as possible. New sheathing may be installed around existing vent openings in braced panels when the length of the panel is increased a distance equal to the length of the vent opening or one stud space minimum.

EXCEPTION: For residential buildings with a post and pier foundation system where a new continuous perimeter foundation system is being installed, ventilation shall be provided in accordance with this code.

18.69.050 Quality control.

A. Inspection by the department. All work shall be subject to inspection by the Building Official including, but not limited to:

1. Placement and installation of new adhesive or expansion anchors or anchor side plates installed in existing foundations.

2. Placement of required blocking and framing anchors.

3. Installation and nailing of new cripple wall bracing. The torque testing of sill plate anchors per Section 18.69.040.C.1 shall be performed by the building inspector.

B. Special inspection. Special inspection is not required for sill plate anchors installed in existing foundations regulated by the provisions of this Chapter. Any work may be subject to special inspection when required by the Building Official or when so designated by the registered design professional of record.

C. Structural observation. Structural observation is not required for work done under the prescriptive provisions of this Chapter. When

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construction documents for strengthening are prepared by a registered design professional and alternate materials or methods are used, structural observation shall be provided as required in Section 1709 of the California Building Code.

D. Registered design professional of record's statement.

When an alternative design is provided per Section 18.69.010.C, the responsible registered design professional of record shall place the following statement on the approved construction document:

1. "I am responsible for this building's seismic strengthening design for the under floor cripple walls and sill bolting in compliance with the minimum seismic resistance standards of Chapter 18.69 of the Long Beach Municipal Code."

or when applicable:

2. "The Registered Special Inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by Section 1704.1 of the California Building Code."

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TABLE 69-A

SILL PLATE ANCHORAGE AND CRIPPLE WALL BRACING[1,2,3]

NUMBER OF STORIES ABOVE CRIPPLE WALLS	MINIMUM SILL PLATE CONNECTION AND MAXIMUM SPACING	AMOUNT OF WALL BRACING
One Story	Adhesive or expansion anchors shall be 1/2 inch minimum diameter spaced at 6 feet maximum center to center.	Each end and not less than 50% of the wall length.
Two Story	Adhesive or expansion anchors shall be 1/2 inch minimum diameter spaced at 4 feet maximum center to center; or 5/8 inch spaced at 6 feet maximum center to center.	Each end and not less than 70% of the wall length.
Three Story	Adhesive or expansion anchors shall be 1/2 inch minimum diameter spaced at 2 feet 8 inches maximum center to center; or 5/8 inch minimum diameter spaced at 4 feet maximum center to center.	100% of the wall length.

[1] Plate washers for use with adhesive or expansion anchors shall be 2 inch by 2 inch by 3/16 inch for 1/2 inch diameter anchors and 2-1/2 inch by 2-1/2 inch by 1/4 inch for 5/8 inch diameter anchors.

[2] Existing sill plate anchor bolts shall be permitted to provide all or a portion of the sill plate connection requirement if:
2.1 the anchor bolt is cast in concrete and in sound condition,
2.2 the diameter size and maximum spacing meets or exceeds the requirements of this table,
2.3 a new plate washer conforming to Footnote 1 is installed, and
2.4 the sill plate is connected to a snug-tight condition and torque tested per Section 18.69.040.C.1.

[3] Anchor side plates shall be permitted when conditions prevent anchor installation vertically through the sill plate.

Section 15. Chapter 18.70 is added to the Long Beach Municipal Code to read as follows:

CHAPTER 18.70

VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING WOOD FRAME RESIDENTIAL BUILDINGS WITH SOFT, WEAK OR OPEN FRONT WALLS

18.70.010 Purpose.

The purpose of this Chapter is to promote the public welfare and safety by reducing the risk of death or injury that may result from the effects of earthquakes on existing wood-frame multi-unit residential buildings. The ground motion of the Northridge earthquake caused the loss of human life, personal injury and property damage in these types of buildings. This Chapter creates minimum standards to strengthen the

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more vulnerable portions of these structures. When fully followed, these minimum standards will substantially improve the performance of these buildings but will not necessarily prevent all earthquake-related damage.

18.70.020 Scope.

The provisions of this Chapter shall apply to all existing wood frame buildings or portions thereof, designed using the Building Code in effect before January 1, 1995, which are used as hotels, lodging houses, congregate residences or apartment houses where:

A. The ground floor portion of the wood frame structure contains parking or other similar open floor space that causes soft, weak or open front wall lines as defined in this Chapter and there exists one or more levels above, or

B. The walls of any story or basement of wood construction are laterally braced with nonconforming structural materials as defined in this Chapter and there exists two or more levels above.

18.70.030 Definitions.

Notwithstanding the applicable definitions, symbols and notations in this code, the following definitions shall apply for the purposes of this Chapter.

APARTMENT HOUSE is any building or portion thereof which contains three or more dwelling units, and for the purposes of this Chapter, includes residential condominiums.

ASPECT RATIO is the ratio of the height of a wall section to its width.

CONGREGATE RESIDENCE is any building or portion thereof which contains facilities for living, sleeping and sanitation, as required by this code, and may include facilities for eating and cooking, for occupancy by other than a family. A congregate residence may be a shelter, convent,

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monastery, dormitory, and fraternity or sorority house but does not include jails, hospitals, nursing homes, hotels or lodging houses.

CRIPPLEWALL is a wood-framed stud wall extending from the top of the foundation wall to the underside of the lowest floor framing.

DWELLING UNIT is any building or portion thereof which contains living facilities, including provisions for sleeping, eating, cooking and sanitation, as required by this code, for not more than one family, or congregate residence for 10 or fewer persons.

EXPANSION ANCHOR is an approved mechanical fastener placed in hardened concrete, designed to expand in a self-drilled or pre-drilled hole of a specified size and engage the sides of the hole in one or more locations to develop shear and/or tension resistance to applied loads without grout, adhesive or drypack.

GROUNDFLOOR is any floor within the wood frame portion of a building whose elevation is immediately accessible from an adjacent grade by vehicles or pedestrians. The ground floor portion of the structure does not include any level that is completely below adjacent grades.

GUEST ROOM is any room or rooms used or intended to be used by a guest for sleeping purposes. Every 100 square feet of superficial floor area in a congregate residence shall be considered a guest room.

HOTEL is any building containing six or more guest rooms intended or designed to be used, rented, hired out to be occupied, or which are occupied for sleeping purposes by guests.

LEVEL is a story, basement or under floor space of a building with cripple walls exceeding 4 feet in height.

LODGINGHOUSE is any building or portion thereof containing at least one but not more than five guest rooms where rent is paid in money, goods, labor or otherwise.

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MOTEL shall mean a hotel as defined in this Chapter.

MULTI-UNIT RESIDENTIAL BUILDINGS are hotels, lodging houses, congregate residences and apartment houses.

NONCONFORMING STRUCTURAL MATERIALS are wall bracing materials for seismic loads whose allowable shear value was reduced or whose maximum allowable aspect ratio was decreased since the original building construction. These methods or materials include, but are not limited to cement or gypsum plaster, gypsum wall board, diagonal or let-in bracing, straight or diagonal wood sheathing, particle board and structural wood panels.

OPEN FRONTWALL LINE is an exterior wall line without vertical elements of the lateral-force-resisting system which requires tributary seismic forces to be resisted by diaphragm rotation or excessive cantilever beyond parallel lines of shear walls.

Diaphragms that cantilever more than 25 percent of the distance between lines of lateral-force-resisting elements shall be considered excessive. Exterior exit balconies of 6 feet or less in width shall not be considered excessive cantilevers.

RETROFIT is an improvement of the lateral-force-resisting system by alteration of existing structural elements or addition of new structural elements.

SOFTWALL LINE is a wall line whose lateral stiffness is less than required by story drift limitations or deformation compatibility requirements of this Chapter. In lieu of analysis, this may be defined as a wall line in a story where the story stiffness is less than 70 percent of the story above for the direction under consideration.

STORY STRENGTH is the total strength of all seismic-resisting elements sharing the same story shear in the direction under

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consideration.

WALLLINE is any length of a wall along a principal axis of the building used to provide resistance to lateral loads. Parallel wall lines separated by less than 4 feet shall be considered one wall line for the distribution of loads.

WEAKWALL LINE is a wall line laterally braced with nonconforming structural materials or a wall line in a story where the story strength is less than 80 percent of the story above in the direction under consideration.

18.70.040 General requirements for phased construction

When the building contains three or more levels, the work specified in this Chapter shall be permitted to be done in the following phases. Work shall start with Phase 1 unless otherwise approved by the Building Official. When the building does not contain the conditions shown in any phase, the sequence of retrofit work shall proceed to the next phase in numerical order.

A. Phase 1 Work. The first phase of the retrofit work shall include the ground floor portion of the wood structure that contains parking or other similar open floor space.

B. Phase 2 Work. The second phase of the retrofit work shall include the walls of any level of wood construction with two or more levels above, which are laterally braced with nonconforming structural materials.

C. Phase 3 Work. The third and final phase of the retrofit work shall include the remaining portions of the building up to, but not including, the top story as specified in Section 18.70.050.B.

18.70.050 Analysis and design

A. General. Every building within the scope of this Chapter shall be analyzed, designed and constructed in conformance with this code except as modified herein. No alteration of the existing lateral-force-

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resisting or vertical load-carrying system shall reduce the strength or stiffness of the existing structure.

B. Scope. This Chapter requires the alteration, repair, replacement or addition of structural elements and their connections to meet the strength and stiffness requirements herein. The lateral load path analysis shall include the resisting elements and connections from the wood diaphragm above any soft, weak or open front wall lines to the foundation soil interface or reinforced concrete slab or masonry wall supporting elements below. The top story of any building need not be analyzed. The lateral load path analysis for added structural elements shall also include evaluation of the allowable soil bearing and lateral pressures in accordance with Section 1804 of the California Building Code.

EXCEPTION: When an open front, weak or soft wall line exists due to parking at the ground level of a two-level building and the parking area is less than 20 percent of the ground floor level, then only the wall lines in the open, weak or soft directions of the enclosed parking area, need comply with the provisions of this Chapter.

C. Design base shear. The design base shear shall be 75% of that currently required by ASCE 7-05 Section 12.8.1.

D. Vertical distribution of forces. The total seismic force shall be distributed over the height of the structure based on Formula (12.8-11 and 12.8-12) in ASCE 7-05 Section 12.8.3. Distribution of force by story weight shall be permitted for two-story buildings. The value of *R* used in the design of any story shall be less than or equal to the value of *R* used in the given direction for the story above.

E. Weak story limitation. The structure shall not exceed thirty (30) feet in height or two (2) levels if the lower level strength is less than

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sixty-five (65) percent of the story above. Existing walls shall be strengthened as required to comply with this provision unless the weak level can resist a total lateral seismic force of Ω_o (per Section 18.70.050.C) times the design force prescribed in Section 18.70.050.D.

The story strength for each level of all other structures shall be a minimum of eighty (80) percent of the story above.

F. Story Drift Limitation. The calculated story drift for each retrofitted level shall not exceed the allowable deformation compatible with all vertical load-resisting elements and 0.005 or 0.04/R times the story height. The calculated story drift shall not be reduced by the effects of horizontal diaphragm stiffness but shall be increased when these effects produce rotation.

The effects of rotation and soil stiffness shall be included in the calculated story drift when lateral loads are resisted by vertical elements whose required depth of embedment is determined by pole formulas such as Equation (18-1), (18-2) and (18-3) in Section 1805.7.2.1 of the California Building Code. The coefficient of variation of subgrade reaction used in the deflection calculations shall be provided from an approved geotechnical engineering report or other approved methods.

G. *P*Δ Effects. The requirements of ASCE 7-05 Section 12.8.7 shall apply except as modified herein. All framing elements not required by the design to be part of the lateral-force-resisting system shall be investigated and shown to be adequate for vertical load-carrying capacity when displaced Ω_o (per Section 18.70.050.C) times the displacements resulting from the required lateral force. The stress analysis of cantilever columns shall use a buckling factor of 2.1 for the direction normal to the axis of the beam.

H. Ties and Continuity. All parts of the structure included in the

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scope of Section 18.70.050.B shall be interconnected and the connection shall be capable of resisting the seismic force created by the parts being connected. Any smaller portion of a building shall be tied to the remainder of the building with elements having a strength of 0.1833 times the tributary dead load of the smaller portion.

A positive connection for resisting a horizontal force acting parallel to the member shall be provided for each beam, girder or truss included in the lateral load path. This force shall not be less than 0.08 times the combined tributary dead and live loads or as required by the lateral load path transfer, whichever is greater.

I. Collector Elements. Collector elements shall be provided which can transfer the seismic forces originating in other portions of the building to the elements within the scope of Section 18.70.050.B that provide resistance to those forces.

J. Horizontal Diaphragms. The analysis of shear demand or capacity of an existing plywood or diagonally sheathed horizontal diaphragm need not be investigated unless the diaphragm is required to transfer lateral forces from the lateral-resisting elements above the diaphragm to other lateral-force-resisting elements below the diaphragm due to offset in placement of the elements. Wood diaphragms in structures that support floors or roofs above shall not be allowed to transmit lateral forces by rotation or cantilever. However, rotational effects shall be accounted for when unsymmetric wall stiffness increases shear demands.

EXCEPTION: Diaphragms that cantilever 25 percent or less of the distance between lines of lateral-force-resisting elements from which the diaphragm cantilevers may transmit their shears by cantilever provided that rotational effects on shear walls parallel and perpendicular to the load are accounted for.

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K. Shear Walls. Shear walls shall have sufficient strength and stiffness to resist the tributary seismic loads and shall conform to the special requirements of this Section.

1. Gypsum or plaster products. Gypsum or plaster products shall not be used to provide lateral resistance.

2. Wood structural panels.

a. Drift limit. Wood structural panel shear walls shall meet the story drift limitation of Section 18.70.050.G. Conformance to the story drift limitation shall be determined by approved testing or calculation or analogies drawn there from and not the use of an aspect ratio. Calculated deflection shall be in accordance with Section 2305.3.2 of the California Building Code and 25 percent shall be added to account for inelastic action and repetitive loading. Contribution to the deflection from the anchor or tie down slippage shall also be included. The slippage contribution shall include the vertical elongation of the metal, the vertical slippage of the connectors and compression or shrinkage of the wood elements. The vertical slippage shall be multiplied by the aspect ratio and added to the total horizontal deflection. Individual shear panels shall be permitted to exceed the maximum aspect ratio provided the story drift and allowable shear capacities are not exceeded.

b. Openings. Openings are permitted in shear walls if they do not exceed 50 percent of the height or width of the shear wall. The remaining portion of the shear wall shall be strengthened for the transfer and increase of all shearing forces caused by the opening. The resulting shear wall shall be analyzed as a mosaic of shear-resisting elements. Blocking and steel strapping shall be employed at the corners of the opening to transfer forces from discontinuous boundary elements into adjoining panel elements.

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The effect of openings on the stiffness of the shear wall shall be demonstrated to comply with the requirements of Section 18.70.050.F. The stiffness shall be calculated using the properties of the different shear elements making up the shear wall or it shall be demonstrated by approved testing. When shear walls cannot be made to conform to the requirements of this Section because of existing openings, the openings shall be relocated or reduced in width to meet the strength and stiffness requirements of the lateral loads. Relocated and altered openings shall comply with the emergency escape requirements in Chapter 10 of the California Building Code. Relocated and altered openings shall comply with the light and ventilation requirements in Chapter 12 of the California Building Code unless otherwise approved by the Building Official.

c. Wood species of framing members. Allowable shear values for wood structural panels shall consider the species of the framing members. When the allowable shear values are based on Douglas Fir-larch framing members and framing members are constructed of other species of lumber, the allowable shear values shall be multiplied by the appropriate factors determined in accordance Chapter 23 of the California Building Code.

3. Mechanical penetrations. Mechanical penetrations in shear walls that exceed the provisions of Chapter 23 of the California Building Code shall be accounted for in the design or the shear wall shall be analyzed as two separate walls on each side of the penetration.

4. Substitution for 3-inch nominal width framing members. Two 2-inch nominal width framing members shall be permitted in lieu of any required 3-inch nominal width framing member when the existing and new framing member are of equal dimensions, are connected as required to transfer the in-plane shear between them and the sheathing fasteners are

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equally divided between them.

5. Hold down connectors.

a. Expansion anchors in tension. Expansion anchors that provide tension strength by friction resistance shall not be used to connect hold down devices to existing concrete or masonry elements. Expansion anchors shall be permitted to provide tension strength by bearing.

b. Required depth of embedment. The required depth of embedment or edge distance for the anchor used in the hold down connector shall be provided in the concrete or masonry below any plain concrete slab unless satisfactory evidence is submitted to the Building Official that shows that the concrete slab and footings are of monolithic construction.

c. Required preload of bolted hold down connectors. Bolted hold down connectors shall be preloaded to reduce slippage of the connector. Preloading shall consist of tightening the nut on the tension anchor after the placement but before the tightening of the shear bolts in the panel flange member. The tension anchor shall be tightened until the shear bolts are in firm contact with the edge of the hole nearest the direction of the tension anchor. Hold down connectors with self-jigging bolt standoffs shall be installed in a manner to permit preloading.

18.70.060 Materials of construction.

A. New materials. All materials approved by this code, including their appropriate allowable stresses and minimum aspect ratios, shall be permitted to meet the requirements of this Chapter.

B. Allowable foundation and lateral pressures. Allowable foundation and lateral pressures shall be permitted to use the values from Table 1804.2 of the California Building Code. The coefficient of variation of subgrade reaction shall be established by an approved geotechnical

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engineering report or other approved methods when used in the deflection calculations of embedded vertical elements as required in Section 18.70.050.F.

C. Existing materials. All existing materials shall be in sound condition and constructed in conformance to this code before they can be used to resist the lateral loads prescribed in this Chapter. The verification of existing material conditions and their conformance to these requirements shall be made by physical observation reports, material testing or record drawings as determined by the responsible registered design professional of record and approved by the Building Official.

1. Horizontal wood diaphragms. Existing horizontal wood diaphragms that require analysis under Section 18.70.050.J shall be permitted to use Table A-23-C of Chapter 18.68 this code for their allowable values.

2. Wood structural panel shear walls.

a. Allowable nail slip values. When the required drift calculations of Section 18.70.050.K.2.a rely on the lower slip values for common nails or surfaced dry lumber, their use in construction shall be verified by exposure. The use of box nails and unseasoned lumber may be assumed without exposure. The verification of surfaced dry lumber shall be by identification conforming to Chapter 23 of the California Building Code.

b. Reduction for clipped nail heads. When exposed nails do not meet the nominal head sizes required for hand-driven nails in Chapter 23 of the California Building Code, the allowable shear capacity for wood structural panel shear walls shall be proportionately reduced. The reduction shall be a percentage of the reduction in the nail head area below the required nail head area including tolerances.

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c. Plywood panel construction. When verification of the existing plywood materials is by use of record drawings alone, the panel construction for plywood shall be assumed to be of three plies.

d. Framing members of other species. When verification of the existing wood material is by use of record drawings, the allowable shear capacity shall be multiplied by the reduction factor of 0.82 for buildings built on or after 1960. Buildings built before this period shall use the reduction factor 0.65. When verification of the existing wood material is by identification in conformance to Chapter 23 of the California Building Code, the allowable shear capacity shall be determined in accordance with Section 18.70.050.K.2.c.

3. Lumber. When the existing dimensioned lumber is not identified in conformance to Chapter 23 of the California Building Code, the allowable stresses shall be permitted for the structural elements specified below.

Posts and Beams	Douglas Fir-larch No.
Joists and Rafters	Douglas Fir-larch No.
Studs, Blocking	Hem Fir Stud

4. Structural steel. All existing structural steel shall be permitted to use the allowable stresses for Grade A36. Existing pipe or tube columns shall be assumed to be of minimum wall thickness unless verified by testing or exposure.

5. Strength of concrete. All existing concrete footings shall be permitted to use the allowable stresses for plain concrete with a compressive strength of 2,000 psi. The strength of existing concrete with a record compressive strength greater than 2,000 psi shall be verified by testing, record drawings or department records.

6. Existing sill plate anchorage. Existing cast-in-place anchor

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bolts shall be permitted to use the allowable service loads for bolts with proper embedment when used for shear resistance to lateral loads.

18.70.070 Required information on construction documents.

A. General. The construction documents shall show all necessary dimensions and materials for plan review and construction and shall accurately reflect the results of the engineering investigation and design.

B. Existing construction. The construction documents shall show the existing diaphragm and shear wall sheathing and framing materials, fastener type and spacing, diaphragm and shear wall connections, continuity ties, and collector elements. The plans shall also show the portion of the existing materials that needs verification during construction.

C. New construction.

1. Foundation plan elements. The foundation plan shall include the size, type, location and spacing of all anchor bolts with the required depth of embedment, edge and end distance; the location and size of all columns for braced or moment frames; referenced details for the connection of braced or moment frames to their footing; and referenced sections for any grade beams and footings.

2. Framing plan elements. The framing plan shall include the width, location and material of shear walls; the width, location and material of frames; references on details for the column-to-beam connectors, beam-to-wall connections, and shear transfers at floor and roof diaphragms; and the required nailing and length for wall top plate splices.

3. Shear wall schedule, notes and details. Shear walls shall have a referenced schedule on the plans that includes the correct shear wall capacity in pounds per foot; the required fastener type, length, gauge

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and head size; and a complete specification for the sheathing material and its thickness. The schedule shall also show the required location of 3-inch nominal or two 2-inch nominal edge members; the spacing of shear transfer elements, such as framing anchors or added sill plate nails; the required hold down with its bolt, screw or nail sizes; and the dimensions, lumber grade and species of the attached framing member.

Notes shall show required edge distance for fasteners on structural wood panels and framing members; required flush nailing at the plywood surface; limits of mechanical penetrations; and the sill plate material assumed in the design. The limits of mechanical penetrations shall also be detailed showing the maximum notching and drilled hole sizes.

4. General notes. General notes shall show the requirements for material testing, special inspection, structural observation and the proper installation of newly added materials.

5. Registered design professional of record's statement. The responsible registered design professional of record shall provide the following statements on the approved construction documents:

a. "I am responsible for designing this building's seismic strengthening in compliance with the minimum seismic resistance standards of Chapter 18.70 of the Long Beach Building Code."

and when applicable:

b. "The Registered Special Inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by Section 1704.1 of the California Building Code."

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Section 16. Chapter 18.71 is added to the Long Beach Municipal Code to read as follows:

CHAPTER 18.71

VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING REINFORCED CONCRETE BUILDINGS AND CONCRETE FRAME BUILDINGS WITH MASONRY INFILLS

8.71.010 Purpose.

The purpose of this Chapter is to promote public safety and welfare by reducing the risk of death or injury that may result from the effects of earthquakes on concrete buildings and concrete frame buildings with masonry infills. The Northridge earthquake caused widespread damage to these buildings, including some collapses.

The recent Great Hanshin earthquake in Kobe, Japan, also caused several hundred of these buildings to collapse. These nonductile concrete buildings are frequently used in Long Beach for department stores, office buildings, hotels, parking structures and some mid-rise condominiums. Their performance in an earthquake is essential to the life and safety of their occupants and the overall stability of the local economy. This Chapter provides voluntary retrofit standards that, when fully followed, will substantially improve the seismic performance of these buildings but will not necessarily prevent all earthquake damage.

18.71.020 Scope.

The provisions of this Chapter may be applied to all buildings designed under building codes in effect prior to January 13, 1976, or built with building permits issued prior to January 13, 1977, having concrete floors and/or concrete roofs supported by reinforced concrete walls or concrete frames and columns, and/or concrete frames with masonry infills.

18.71.030 Definitions.

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For purposes of this Chapter, the applicable definitions and notations in Section 1602, 1613.2 and 1902 of the California Building Code and the following definition shall apply:

MASONRY INFILL is the unreinforced or reinforced masonry wall construction within a reinforced concrete frame.

18.71.040 General requirements.

When the owner of each building within the scope of this Chapter causes an investigation of the existing construction, a structural analysis shall be made of the building by a registered design profession licensed by the State of California.

EXCEPTION: Regular concrete shear wall buildings, of four stories in height and under, may be shown to be in conformance with this Chapter by filing a report signed by a registered design profession licensed by the State of California containing the information specified in Section 18.71.090.

18.71.050 Criteria selection.

A. Basis for analysis. The building shall be analyzed to determine the displacements caused by inertial force effects determined in accordance with the dynamic lateral analysis procedure of Section 18.71.060. The building structural system shall provide a complete load path for resisting the effects of seismic loading. The capacity of all parts of the structural system shall exceed the demand calculated by the dynamic analysis using the effective stiffnesses determined by a nonlinear analysis of the elements.

EXCEPTION: Buildings conforming to the requirements of Sections 18.71.050.D.2 and 18.71.050.D.3 may be analyzed using the procedure specified in Sections 18.71.070 and 18.71.080, respectively.

B. Site geology and soil characteristics. In the absence of a

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soils investigation, the soil site class shall be taken as Type D.

C. Configuration requirements.

1. General. Each structure shall be designated as structurally regular or irregular.

2. Regular structures. Regular structures have no significant physical discontinuities in plan or vertical configuration or in their lateral-force-resisting systems such as the irregular features described below.

3. Irregular structures.

a. Irregular structures have significant physical discontinuities in configuration or in their lateral-force-resisting systems. Irregular features include, but are not limited to, those described in Tables 12.3-1 and ASCE 7-05 Section 12.3-2.

b. Structures having one or more of the features listed in Table 12.3-2 of ASCE 7-05 shall be designated as having a vertical irregularity.

EXCEPTION: Where none of the story drift ratios under equivalent lateral forces is greater than 1.3 times the story drift ratio of the story above, the structure may be deemed to not have the structural irregularities of Type 1 or 2 listed in Table 12.3-2 of ASCE 7-05. The story drift for this determination shall be calculated including torsional effects.

c. Structures having one or more of the features listed in Table 12.3-1 of ASCE 7-05 shall be designated as having a plan irregularity.

d. Irregular structures conforming to the requirements of Sections 18.71.050.D and 18.71.080 may be considered regular if the plan and vertical irregularities are removed by the addition of lateral load-resisting systems.

D. Selection of lateral analysis procedure.

1. General. Any structure may be analyzed using the dynamic lateral analysis procedures of Section 18.71.060. The equivalent lateral

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force procedure or the simplified analysis may be used for structures conforming to the requirements on the use of those analyses.

2. Equivalent lateral force. The equivalent lateral force procedure of Section 18.71.070 may be used for regular structures or irregular structures having plan irregularity only of not more than four stories.

3. Simplified analysis. Regular structures of not more than four stories conforming to the requirements of Section 18.71.080 may be analyzed for a prescribed strength of their systems and elements.

E. Alternative procedures.

1. General. Alternative lateral analysis procedures using rational analyses based on well-established principles of mechanics may be used in lieu of those prescribed in this Chapter when approved by the Building Official.

2. Seismic isolation. Seismic isolation (Chapter 17 of ASCE 7-05, Seismic Design Requirements For Seismically Isolated Structures), energy dissipation and damping systems may be used to reduce story drift when approved by the Building Official. The isolated structure shall comply with the drift requirements of Section 18.71.060.

18.71.060 Dynamic lateral analysis procedure.

A. General. Structures shall be analyzed for seismic forces acting concurrently on the orthogonal axes of the structure. The effects of the loading on two orthogonal axes shall be combined by the square root of the sum of the squares (SRSS) methods.

B. Ground motion. The seismic ground motion values shall be determined in accordance with ASCE 7-05 and may be one of the following:

1. The elastic design response spectrum shall be 75 percent of

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the response spectrum described in ASCE 7-05 Section 11.4.5.

2. A site-specific response spectrum shall be 75 percent of the site-specific response spectrum described in ASCE 7-05 Section 11.4.7.

C. Mathematical model. The three-dimensional mathematical model of the physical structure shall represent the spatial distribution of mass and stiffness of the structure to an extent which is adequate for the calculation of the significant features of its dynamic response. All concrete and masonry elements shall be included in the model of the physical structure.

EXCEPTION: Concrete or masonry partitions that are adequately isolated from the concrete frame members and the floor above.

Cast-in-place reinforced concrete floors with span-to-depth ratios less than 3:1 may be assumed to be rigid diaphragms. Other floors, including floors constructed of precast elements with or without a reinforced concrete topping, shall be analyzed in conformance with ASCE 7-05 Section 12.3.1.3 to determine if they must be considered as flexible diaphragms. The effective in-plane stiffness of the diaphragm, including effects of cracking and discontinuity between precast elements, shall be considered. Ramps that interconnect floor levels shall be modeled as having mass appropriately distributed on that element. The lateral stiffness of the ramp may be calculated as having properties based on the uncracked cross section of the slab exclusive of beams and girders.

D. Effective stiffness.

1. General. The effective stiffness of concrete and masonry elements or systems shall be calculated as the secant stiffness of the element or system with due consideration of the effects of tensile cracking and compression strain. The secant stiffness shall be taken from the force-displacement relationship of the element or system. The secant

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stiffness shall be measured as the slope from the origin to the intersection of the force-displacement relationship at the assumed displacement. The force-displacement relationship shall be determined by a nonlinear analysis. The force-displacement analysis shall include the calculation of the displacement at which strength degradation begins.

EXCEPTION: The initial effective moment of inertia of beams and columns in shear wall or infilled frame buildings may be estimated using Table 71-B. The ratio of effective moment of inertia used for the beams and for the columns shall be verified by Formulas (71-1), (71-2) and (71-3). The estimates shall be revised if the ratio used exceeds the ratio calculated by more than 20 percent.

$$I_e = \left(\frac{M_{cr}}{M_a}\right)^3 I_g + \left[1 - \left(\frac{M_{cr}}{M_a}\right)^3\right] I_{cr} \leq I_g \qquad (71\text{-}1)$$

WHERE:

$$M_{cr} = \frac{f_r I_g}{y_t} \qquad (71\text{-}2)$$

and

$$f_r = 7.5 \sqrt{f'_c} \qquad (71\text{-}3)$$

2. Infills. The effective stiffness of an infill shall be determined from a nonlinear analysis of the infill and the confining frame. The effect of the infill on the stiffness of the system shall be determined by differencing the force-displacement relationship of the frame-infill system from the frame-only system.

3. Model of infill. The mathematical model of an infilled frame structure shall include the stiffness effects of the infill as a pair of diagonals in the bays of the frame. The diagonals shall be considered as having concrete properties and only axial loads.

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Their lines of action shall intersect the beam-column joints. The secant stiffness of the force-displacement relationship, calculated as prescribed in Section 18.71.060.D.2, shall be used to determine the effective area of the diagonals. The effective stiffness of the frame shall be determined as specified in Section 18.71.060.D.1. Other procedures that provide the same effective stiffness for the combination of infill and frame may be used when approved by the Building Official.

4. Effective stiffness of elements and systems. The effective stiffness shall be determined by an iterative method. The mathematical model using assumed effective stiffness shall be used to calculate dynamic displacements. The effective stiffness of all concrete and masonry elements shall be modified to represent the secant stiffness obtained from the nonlinear force displacement analysis of the element or system at the calculated displacement. A reanalysis of the mathematical model shall be made using the adjusted effective stiffness of existing and supplemental elements and systems until closure of the iterative process is obtained. A difference of 10 percent from the effective stiffness used and that recalculated may be assumed to be closure of the iterative process.

E. Description of analysis procedures.

1. Response spectrum analysis. Response spectrum analysis is an elastic dynamic analysis of a structure utilizing the peak dynamic response of all modes having a significant contribution to total structural response. Peak modal responses are calculated using the ordinates of the appropriate response spectrum curve which correspond to the modal periods. Maximum modal contributions are combined in a statistical manner to obtain an approximate total structural response.

2. Number of modes. The requirement of Section

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18.71.060.E.1 may be satisfied by demonstrating that for the modes considered, at least 90 percent of the participating mass of the structure is included in the calculation of response for each principal horizontal direction.

3. Combining modes. The peak displacements for each mode shall be combined by recognized methods. Modal interaction effects of three-dimensional models shall be considered when combining modal maxima.

4. Torsion. The three-dimensional analysis shall be considered as including all torsional effects including accidental torsional effects.

F. Material characteristics. The stress-strain relationship of concrete, masonry and reinforcement shall be determined by testing or from published data. The procedure for testing and determination of stress-strain values shall be as prescribed in one of the following:

1. Concrete. The compressive strength of existing concrete shall be determined by tests on cores sampled from the structure or may be taken from information given on the construction documents and confirmed by limited testing. A default value of horizontal shear stress may be used in Section 18.71.080.E.1 without testing of the compressive strength of the existing concrete.

a. The cutting of cores shall not significantly reduce the strength of the existing structure. Cores shall not be taken in columns. Existing reinforcement shall not be cut.

b. If the construction documents do not specify a minimum compressive strength of the classes of concrete, five cores per story, with a minimum of 10 cores, shall be obtained for testing.

EXCEPTION: If the coefficient of variation of the compressive strength does not exceed 15 percent, the number of cores per story may

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be reduced to two and the minimum number of tests reduced to five.

c. When the construction documents specify a minimum compressive strength, two cores per story, per class of concrete, shall be taken in the areas where that concrete was to be placed. A minimum of five cores shall be obtained for testing. If a higher strength of concrete was specified for columns than the remainder of the concrete, cores taken in the beams for verification of the specified strength of the beams shall be substituted for tests in the columns. The strength specified for columns may be used in the analyses if the specified compressive strength in the beams is verified.

d. The sampling for the concrete strength tests shall be distributed uniformly in each story. If the building has shear walls, a minimum of 50 percent of the cores shall be taken from the shear walls. Not more than 25 percent of the required cores shall be taken in floor and roof slabs. The remainder of cores may be taken from the center of beams at mid-span. In concrete frame buildings, 75 percent of the cores shall be taken from the beams.

e. The mean value of the compressive stresses obtained from the core testing for each class of concrete shall be used in the analyses. Values of peak strain that is associated with peak compressive stress may be taken from published data for the nonlinear analyses of reinforced concrete elements.

2. Solid grouted reinforced masonry. The compressive strength of solid grouted concrete block or brick masonry may be taken as 2,000 psi. The strain associated with peak stress may be taken as 0.0025.

3. Partially grouted masonry. A minimum of five units shall be removed from the walls and tested in conformance with ASTM C90-03 Specification for Loadbearing Concrete Masonry Units. Compressive

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strength of the masonry may be determined in accordance with Chapter 21 of the California Building Code, assuming Type S mortar. The strain associated with peak stress may be taken as 0.0025.

4. Unreinforced masonry.

a. The stress-strain relationship of existing unreinforced masonry shall be determined by in-place cyclic testing. The test procedure shall conform to Section 18.71.100.

b. One stress-strain test per story and a minimum of five tests shall be made in the unreinforced masonry infills. The location of the tests shall be uniformly distributed throughout the building.

c. The average values of the stress-strain values obtained from testing shall be used in the nonlinear analyses of frame-infill assemblies or in the calculation of the effective diagonal brace that is used in the simplified analysis procedure of Section 18.71.080.

5. Reinforcement. The yield stress of each type of new or existing reinforcement shall be taken from Table 71-C unless the reinforcement is sampled and tested for yield stress. The axial reinforcement in columns of post-1933 buildings shall be assumed to be hard grade unless noted otherwise on the construction documents.

6. Combination of concrete and masonry materials. Combinations of masonry and concrete infills shall be assumed to have equal strain. The secant moduli at peak stress of the masonry and concrete shall be used to determine the effective transformed area of the composite material.

G. Story drift limitation.

1. Definition. Story drift is the displacement of one level relative to the level above or below calculated by the response spectrum analysis using the appropriate effective stiffness.

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2. Limitation. The story drift is limited to that displacement that causes any of the following effects:

a. Compressive strain of 0.003 in the frame confining infill or in a shear wall.

b. Compressive strain of 0.004 in a reinforced concrete column unless the engineer can show by published experimental research that the existing confinement reinforcement justifies higher values of strain.

c. Peak strain in masonry infills as determined by experimental data or by physical testing as prescribed in Section 18.71.100.

d. Displacement that was calculated by the nonlinear analysis as when strength degradation of any element began.

EXCEPTION: Item (d) may be taken as the displacement that causes a strength degradation in that line of resistance equal to 10 percent of the sum of the strength of the elements in that line of resistance.

e. A story drift of 0.015 using the dynamic analysis procedure or the forces specified in Section 18.71.070. This limitation shall not supersede the limitations of Items (a) through (d).

H. Compressive strain determination.

1. General. The compressive strain in columns, shear walls and infills may be determined by the nonlinear analysis or a procedure that assumes plane sections remain plane.

2. Axial and flexural loading. The compressive strain shall be determined for combined flexure and axial loading. The flexural moments shall be taken from the response spectrum model for frame or shear wall buildings, and from the substructure model for infill frames. The axial loads shall have the following combination of effects, where *L* is unreduced live load:

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$U = 1.0D + 0.3L + 1.0E$ (71-4)

$U = 0.9D - 1.0E$ (71-5)

I. Shear strength limitation. The required in-plane shear strength of all columns, piers and shear walls shall be the shear associated with the moments induced at the ends of columns or piers and at the base of shear walls by the story displacements. No strength reduction factors shall be used in the determination of strength.

18.71.070 Equivalent lateral force procedure.

A. General. Structures shall be analyzed for prescribed forces acting concurrently on the orthogonal axes of the building. The effects of the loading on the two orthogonal axes shall be combined as required by Section 18.71.060.A.

B. Base shear for analysis. The base shear used to determine story drifts shall be determined using 75 percent of the base shear as determined in accordance with ASCE 7-05 Section 12.8.1.

WHERE:

R = 1.4 for concrete frame buildings with masonry infill and all other reinforced concrete buildings.

EXCEPTION: R = 1.0 for single-story buildings. The R value in ASCE 7-05 Table 12.2-1 for new building design shall not be used for story drift determination.

C. Structure period. The value of T may be determined by either Method A or B as prescribed by ASCE 7-05 Section 12.8.2. The structure period calculated by Method B need not be limited to a percent of the value obtained by Method A.

D. Vertical distribution of forces. The base shear shall be distributed over the height of the structure in conformance with

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Formula (71-6).

$$C_{vx} = \left| \frac{w_x h_x^{\,k}}{\sum_{i=1}^{i=n} w_i h_i^{\,k}} \right| \qquad (71\text{-}6)$$

WHERE:

C_{vx} = vertical distribution factor to be applied to *V* to obtain the story force at level *x*.

k = an exponent related to building period as follows:

For buildings having a period of 0.4 seconds or less,

k = 1.0

For buildings having a period of 2.0 seconds or more,

k = 2.0

For buildings having a period between 0.4 and 2.0 seconds, *k* may be taken as two or determined by linear interpolation between one and two.

E. Horizontal distribution of shear. The effective stiffness of elements shall be used for the horizontal distribution of shear.

F. Horizontal torsional moments. Provision shall be made for increased displacements resulting from horizontal torsion. The effects of torsional moments shall be included in the determination of the effective stiffness of elements and systems. Reinforced concrete floors may be considered as rigid diaphragms.

G. Effective stiffness. The effective stiffness of concrete and masonry elements shall be determined as prescribed in Section 18.71.060.D.

H. Material characteristics. Material characteristics shall be determined as prescribed in Section 18.71.060.F.

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I. Story drift limitations. Story drift limits shall be as prescribed in Section 18.71.060.G.

J. Compressive strain determination. Compressive strain shall be determined as prescribed in Section 18.71.060.H.

K. Shear strength limitation. The in-plane shear strength shall equal or exceed the shear forces determined as prescribed in Section 18.71.060.I.

18.71.080 Simplified analysis procedure.

A. General. Structures conforming to the requirements of this Section may be analyzed for having a required strength by a simplified analysis procedure.

B. Required features of the building. The building shall conform to all the following features, or the building shall be analyzed by the equivalent lateral force procedure or the dynamic lateral force procedure as prescribed by Section 18.71.050.D of this code.

1. The lateral-resisting elements of the building shall be reinforced concrete shear walls or frames with solid masonry infills and infills which have openings in the masonry infills not exceeding 10 percent of the gross area of the infill panel which has the opening(s).

2. The effective shear area of reinforced concrete shear walls on each orthogonal axis shall be calculated by passing a horizontal plane through each story level. The height of the plane shall be that height where the area of the shear walls is a minimum.

3. The reinforced concrete elements shall have no visible deterioration of concrete or reinforcement.

4. The vertical elements in the lateral-load-resisting system shall not have significant strength discontinuities; the story strength in any story shall not be less than 90 percent of the strength of the story above.

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5. The lateral-force-resisting elements in all story levels shall form a system that is not subject to significant torsion. Significant torsion is the condition where the distance between the story center of rigidity and the story center of mass is greater than 20 percent of the width of the structure in the corresponding plan dimension.

6. The minimum ratio of area of reinforcement to gross area of wall in existing reinforced concrete shear walls shall be 0.0015 in both the vertical and horizontal direction or the minimum ratio of axial reinforcement in the columns of frames containing infills shall be 0.01.

7. The ratio of total height to base length of cantilevered or coupled shear walls shall be two or less. The ratio of clear height to in-plane depth of piers in a shear wall shall be two or less. Shear walls or piers having a height to in-plane depth ratio greater than two shall be given an effective shear area of one-half their area.

8. All concrete frames with infilled panels conforming to Item 1 above shall have total height to base length ratios of 2:1 or less.

C. Analysis procedure.

1. General. Supplemental elements may be added to the existing building to bring the structure into conformance with Section 18.71.090.B.

2. Seismic loading. The seismic loading shall be calculated by Section 18.71.070.B. The loading of each story level shall be calculated by Formula (71-6) of Section 18.71.070.D.

3. Relative rigidities. The relative rigidity of reinforced concrete shear walls may be based on the stiffness of uncracked sections. The relative rigidity of infill panels may be calculated using a common modulus of elasticity. Use of a combination of infills and reinforced concrete or masonry shear walls on any orthogonal axis is prohibited.

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4. Required calculations. The calculations may be limited to computation of loads on the reinforced concrete shear walls or infilled frame panels that comply with Section 18.71.080.B and computation of the drag and tie forces that develop a complete load path. The loads shall include torsional effects.

D. Required strength of systems and elements.

1. The capacity of all parts of the structure shall exceed the demand calculated by use of the loading specified in Section 18.71.070.

2. The strength of infilled frame systems used for lateral load resistance in this Section shall be calculated using only the infilled frames that conform to Item 1 of Section 18.71.080.B.

E. Shear stress limit.

1. The maximum horizontal shear stress in new and existing reinforced concrete shear walls shall not exceed 2 $(f'c)^{1/2}$. For the purpose of this Chapter, the horizontal shear stress may be taken as 80 psi without testing as required by Item 1 of Section 18.71.060.F.

2. The in-plane shear stress in any masonry infilled panel shall not exceed 30 psi. The calculation of shear stresses shall use net section area and only the area of the infilled masonry.

EXCEPTION: The in-plane strength of an infill panel without openings may be calculated by procedures described in published research that were verified by experimental testing and approved by the Building Official.

18.71.090 Minimum requirements for a limited structural analysis.

A. General. Structures conforming to the requirements of this Section may be shown to be in conformance with this Chapter by submission of the report described in this Section.

B. Required features of the building. The building shall conform

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to all of the following features or the building shall be analyzed as prescribed by Section 18.71.050.D of this code.

1. The lateral-load-resisting elements of the building shall be reinforced concrete shear walls.

2. The minimum ratio of area of reinforcement to gross area of the wall shall be 0.0015 in both the vertical and horizontal directions.

3. The reinforced concrete elements shall have no visible deterioration of concrete or reinforcement.

4. The area of concrete shear walls on each orthogonal axis at the first floor level shall be 1.5 *n* percent of the area of the first floor of the building, where *n* is the number of floor and roof levels.

5. The area of the shear walls in all stories above the first floor shall not be more than 100 percent or less than 80 percent of the area of shear walls at the first floor.

6. The concrete shear walls in all stories above the first floor shall be directly above the shear walls at the first floor which are used to calculate the percent of shear wall area to floor area.

7. The wall area must be uniformly distributed such that at least 80 percent of the wall area used in the calculation is symmetrically placed about the center of the building.

8. The area of the shear walls on each orthogonal axis shall be calculated by passing a horizontal plane through the first story level. The height of the plane shall be that height where the area of the shear walls is a minimum.

9. The ratio of total height to base width of cantilevered or coupled shear walls shall be two or less. The ratio of the clear height to in-plane depth of piers in a shear wall shall be two or less. Shear walls or piers having a height to depth ratio greater than two shall be given an

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effective area of one-half of their area.

C. Information required in the report.

1. The report shall include data, sketches, plans and calculations that show conformance with the features given in this Section.

2. The registered design professional of record shall meet with the representative of the department at the site to review the report.

18.71.100 Determination of the stress-strain relationship of existing unreinforced masonry.

A. Scope. This Section covers procedures for determining the expected compressive modulus, peak strain and peak compressive stress of unreinforced brick masonry used for infills in frame buildings.

B. General procedure. The outer wythe of multiple wythe brick masonry shall be tested by inserting two flat jacks into the mortar joints of the outer wythe. The prism height, the vertical distance between the flat jacks, shall be five bricks high. The test location shall have adequate overburden and/or vertical confinement to resist the flat jack forces.

C. Preparation for the test. Remove a mortar joint at the top and bottom of the test prism by saw cutting or drilling and grinding to a smooth surface. The cuts for inserting the flat jacks shall not have a deviation from parallel of more than 3/8 inch. The deviation from parallel shall be measured at the ends of the flat jacks. The width of the saw cut shall not exceed the width of the mortar joint. The length of the sawcut on the face of the wall may exceed the length of the flat jacks by not more than twice the thickness of the outer wythe plus 1 inch.

D. Required equipment. The flat jacks shall be rectangular or with semicircular ends to mimic the radius of the saw blade used to cut the slot for the flat jack. The length of the flat jack shall be 18 inches maximum and 16 inches minimum. This length shall be measured on the longest

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edge of a flat jack with semicircular ends. The maximum width of the flat jack shall not exceed the average width of the wythe of brick that is loaded. The minimum width of a flat jack shall be 3-1/2 inches measured out-to-out of the flat jack. The flat jack shall have a minimum of two ports to allow air in the flat jack to be replaced by hydraulic fluid. The unused port shall be sealed after all the air is forced out of the flat jack. The thickness of the flat jack shall not exceed three quarters of the minimum height of the mortar joint. It is recommended that the height of the flat jack be about one half of the width of the slot cut for installation of the flat jack. The remaining space can be filled with steel shim plates having plan dimensions equal to the flat jack.

E. Data acquisition equipment. The strain in the tested prism shall be recorded by gages or similar recording equipment having a minimum range of one ten-thousandth of an inch. The compressive strain shall be measured on the surface of the prism and shall have a gage length, measured vertically on the face of the prism, of 10 inches minimum. The gage points shall be fixed to the wall by drilled-in anchors or by anchors set in epoxy or similar material. The support for the data-recording apparatus shall be isolated from the wall by a minimum of 1/16 inch so that the gage length used in the calculation of strain can be taken as the measured length between the anchors of the equipment supports. The gaging equipment shall be as close to the face of the prism as possible to minimize the probability of erroneous strain measurements caused by bulging of the prism outward from its original plane.

The compressive strain data shall be measured at a minimum of two points on the vertical face of the prism. These points shall be the one-third points of the length of the flat jacks plus or minus 1/2 inch. As an alternative, the strain may be measured at three points on the face of the

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prism.

These points shall be spaced at one quarter of the flat jack length plus or minus 1/2 inch.

Horizontal gages at mid-height of the prism may be used to record Poisson strain, but this gage should be considered as recording data secondary in importance to the vertical gages and its placement shall not interfere with placing the vertical gaging as close as possible to the face of the prism.

F. Loading and recording data. The loading shall be applied by hydraulic pumps that add hydraulic fluid to the flat jacks in a controlled method. The application of load shall be incremental and held constant while strains are being recorded. The increasing loading for each cycle of loading shall be divided into a minimum of four equal load increments. The strain shall be recorded at each load step. The decrease in loading shall be divided into a minimum of two equal unloading increments. Strain shall be recorded on the decreasing load steps. The hydraulic pressure shall be reduced to zero and the permanent strain caused by this cycle of loading shall be recorded. This procedure shall be used for each cycle of loading.

The load applied in each cycle of load shall be determined by estimating the peak compressive stress of the existing brick masonry. The hydraulic pressure needed to cause this peak compressive stress in the prism shall be calculated by assuming the area of the loaded prism is equal to the area of the flat jack. A maximum of one third of this pressure, rounded to the nearest 25 psi, shall be applied in the specified increments to the peak pressure prescribed for the first cycle of loading. After recording the strain data, this pressure shall be reduced in a controlled manner to each of the specified increments for unloading and for recording data. The maximum jack pressure on the subsequent cycles

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shall be one-half, two-thirds, five-sixths and estimated peak pressure. If the estimated peak compressive stress is less than the existing peak compressive stress, the cyclic loading and unloading shall continue using increments of increasing pressure equal to those used prior to the application of estimated peak pressure.

All strain data shall be recorded to one ten-thousandth of an inch. Jack pressure shall be recorded in increments of 25 psi pressure.

G. Quality control. The flat jack shall be calibrated before use by placing the flat jack between bearing plates of 2 inches minimum thickness in a calibrated testing machine. A calibration curve to convert hydraulic pressure in the flat jack to total load shall be prepared and included in the report of the results of testing. Flat jacks shall be recalibrated after three uses.

The hydraulic pressure in the flat jacks shall be indicated by a calibrated dial indicator having a subdivision of 25 psi or less. The operator of the hydraulic pump shall use this dial indicator to control the required increments of hydraulic pressure in loading and unloading.

H. Interpretation of the data. The data obtained from the testing required by Item 4(b) of Section 18.71.060.F shall be averaged both in expected peak compressive stress and the corresponding peak strain. The envelope of the averaged stress-strain relationship of all tests shall be used for the material model of the masonry in the infilled frame. If two strain measurements have been made on the surface of the prism, these strain measurements shall be averaged for determination of the stress-strain relationship for the test. If three strain measurements have been made on the surface of the prism, the data recorded by the center gage shall be given a weight of two for preparing the average stress-strain relationship for the test.

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18.71.110 Evaluation of existing structural conditions.

The registered design professional of record shall report any observed structural conditions and structural damage that, in the registered design professional's judgment, have imminent life-safety effects on the structure and recommend repairs. Evaluations and repairs shall be reviewed and approved by the department.

18.71.120 Materials of construction.

All materials permitted by this code may be used to reduce the story drifts. Their effective stiffness shall be determined by a nonlinear analysis using principles of engineering mechanics and expected material characteristics.

18.71.130 Information required on the construction documents.

A. General. In addition to the seismic analysis required elsewhere in this Chapter, the registered design professional responsible for the seismic analysis of the building shall record the information required by this Section on the approved construction documents.

B. Information required. The construction documents shall accurately reflect the results of the engineering investigation and design, and show all pertinent dimensions and sizes for plan review and construction. The following shall be provided:

1. The construction documents of the existing construction shall be adequately dimensioned and furnish adequate details in schedules, notes and sections to fully describe the existing building. The construction documents shall include a foundation plan, floor and roof plans which indicate new work, and existing construction.

2. Elevations of the structural system showing sizes and dimensions.

3. Schedules, sections and details showing reinforcement of

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walls, slabs, beams, joists, girders, columns and foundations.

EXCEPTION: If copies of the original construction documents are submitted for information during the plan check, the information required by Items 1, 2 and 3 may be limited to areas of and adjacent to new construction on a complete outline at that level of the building.

4. Sections and details showing attachments and joining of new and existing structures. All reinforcement in the existing structure shall be shown in these sections and details.

5. Specifications and/or general notes fully describing demolition, materials and methods, testing and inspection requirements.

C. Registered design professional of record's statement. The responsible registered design professional of record shall state on the approved construction documents the following:

1. "I am responsible for this building's seismic strengthening design in compliance with the minimum seismic resistance standards of Chapter 18.71 of the Long Beach Building Code."

or when applicable:

2. "The Registered Special Inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by Section 1704.1 of the California Building Code."

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TABLE 71-A

RATING CLASSIFICATIONS CLASSIFICATION TYPE OF BUILDING

CLASSIFICATION	TYPE OF BUILDING
Group I	Essential buildings
Group II	Buildings with occupant load of 5,000 or more, or assembly rooms of 1,000 occupants or more, and malls as defined elsewhere in the code.
Group III	1,000 to 4,999 occupants
Group IV	300 to 999 occupants
Group V	All others

TABLE 71-B

INITIAL EFFECTIVE MOMENT OF INERTIA OF CONCRETE MEMBERS

MEMBER	RANGE
Rectangular beams	0.30 - 0.5 I_g
T- and L-shaped beams	0.25 - 0.45 I_g
Columns P>0.5 $f_c' A_g$	0.7 - 0.9 I_g
Columns P = 0-.2 $f_c' A_g$	0.5 - 07 I_g
Columns P = 0.05 $f_c' A_g$	0.3 - 0.5 I_g

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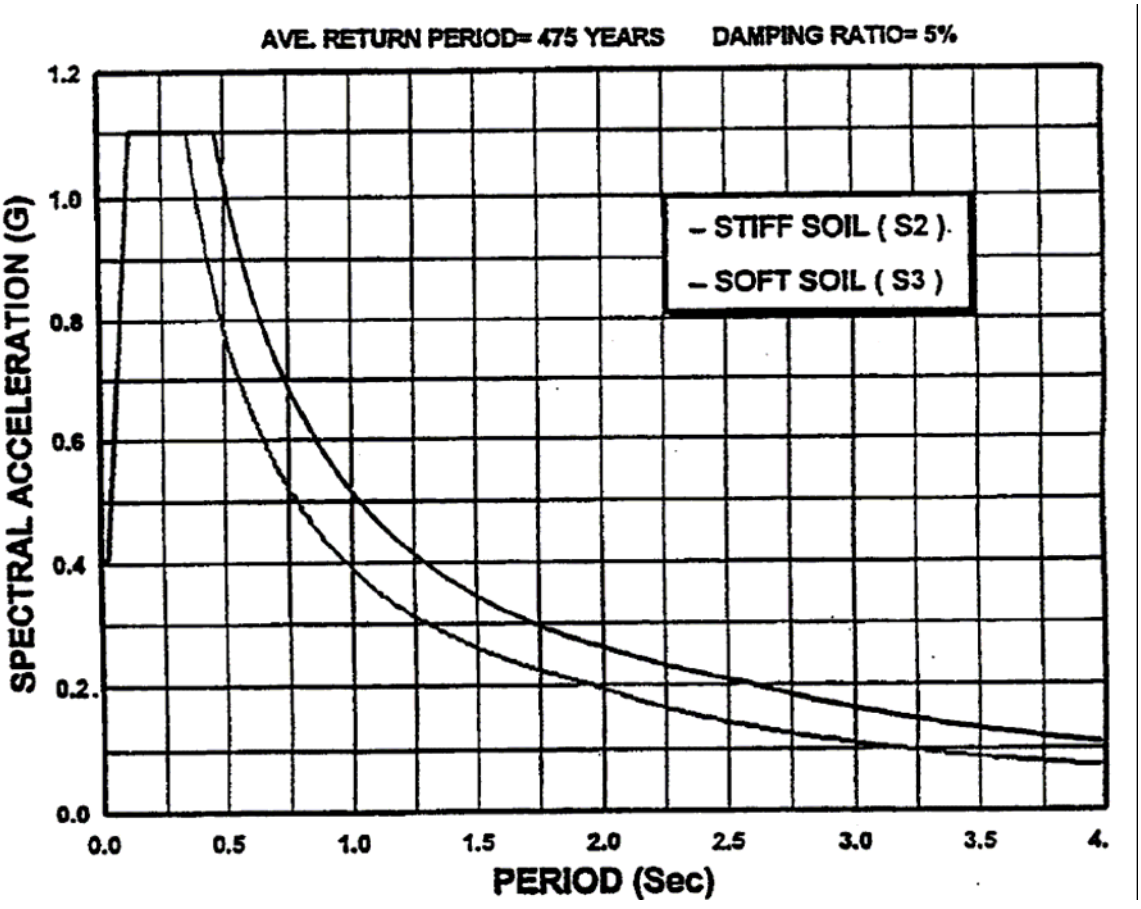
TABLE 71-C

ASSUMED YIELD STRESS OF EXISTING REINFORCEMENT

TYPE OF REINFORCEMENT AND ERA	ASSUMED YIELD STRESS, ksi
Pre-1940--Structural and intermediate grade, plain and deformed	45
Pre-1940--Twisted and hard grade	55
Post-1940--Structural and intermediate grade	45
Post 1940--Hard grade	60
ASTM A 615 Grade 40	50
ASTM A 615 Grade 60	70

For SI: 1 ksi = 6.894 MPa.

FIGURE 71-1 RESPONSE SPECTRA SHAPES



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Section 17. Chapter 18.72 is added to the Long Beach Municipal Code to read as follows:

CHAPTER 18.72

VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING REINFORCED CONCRETE AND REINFORCED MASONRY WALL BUILDINGS WITH FLEXIBLE DIAPHRAGMS

18.72.010 Purpose.

The purpose of this Chapter is to promote public safety and welfare by reducing the risk of death or injury that may result from the effects of earthquakes on reinforced concrete and masonry wall buildings with flexible diaphragms designed under the building codes in effect prior to January 1, 1995. These buildings are potentially hazardous and prone to significant damage, including possible collapse, in a moderate to major earthquake. These structures typically shelter large numbers of persons and property for retail, food markets, food distribution centers, warehousing, aerospace, industrial/manufacturing and general business and office use. Their continued use after an earthquake is also essential to the local economy and its post-earthquake recovery.

The provisions of this Chapter are minimum standards for structural seismic resistance established primarily to reduce the risk of loss of life or injury on both subject and adjacent properties and will not necessarily prevent all earthquake damage to an existing building which complies with these standards. This Chapter shall not require existing electrical, plumbing, mechanical or fire safety systems to be altered unless they constitute a hazard to life or property.

This Chapter provides voluntary retrofit standards for deficient wall anchorage systems on structures that are not subject to the mandatory provisions of Chapter 18.68. When fully followed, these standards will

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strengthen the portion of the structure that is most vulnerable to earthquake damage.

18.72.020 Scope.

The voluntary provisions of this Chapter shall apply to existing buildings of the following types:

A. Cast-in-place reinforced concrete or masonry wall buildings with flexible diaphragms designed under building codes in effect prior to January 1, 1995.

B. Tilt-up concrete wall buildings with flexible diaphragms designed under the building codes in effect prior to January 1, 1995, but after January 1, 1976. All existing reinforced masonry or concrete buildings with flexible diaphragms, including tilt-up concrete wall buildings, designed under the building code in effect on or after January 1, 1995, shall be designed in conformance with Chapter 16 of the California Building Code.

18.72.030 Definitions.

For the purposes of this Chapter, the applicable definitions in Chapter 2, Sections 1602, 1613.2, 1902, and 2302 of the California Building Code; Sections 1.2, 3.1.1, 4.1, 5.2, 6.2 and 11.2 of ASCE 7-05, and the following shall apply.

ANCHORAGE SYSTEM is the system of all structural elements and connections which support the concrete or masonry wall in the lateral direction, including diaphragms and subdiaphragms, wall anchorage and continuity or crosstie connectors in subdiaphragms and main diaphragms.

COMMENCED CONSTRUCTION is construction pursuant to a valid building permit that has progressed to the point that one of the called inspections as required by the department has been made and the work for which the inspection has been called has been judged by the

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department to be substantial and has been approved by the department.

EXISTING BUILDING is an erected building for which a legal building permit and a certificate of occupancy have been issued.

FLEXIBLE DIAPHRAGM is any diaphragm constructed of wood structural panel, diagonal or straight wood sheathing, metal decking without a structural concrete topping, or horizontal rod bracing.

HISTORICAL BUILDING is any building designated or currently in the process of being designated as a historical building by an appropriate federal, state or city jurisdiction.

REINFORCED CONCRETE WALL is a concrete wall which has 50 percent or more of the reinforcing steel required for reinforced concrete in Chapter 19 of the California Building Code.

REINFORCED MASONRY WALL is a masonry wall which has 50 percent or more of the reinforcing steel required by Item 2.3 of Section 2106.4 of the California Building Code.

RETROFIT strengthens or structurally improves the lateral force-resisting system of an existing building by alteration of existing or addition of new structural elements.

TILT-UP CONCRETE WALL is a form of precast concrete panel construction either cast in the horizontal position at the site and after curing, lifted and moved into place in a vertical position, or cast off-site in a fabricator's shop.

18.72.040 Analysis and design.

A. Wall panel anchorage. Concrete and masonry walls shall be anchored to all floors and roofs which provide lateral support for the wall. The anchorage shall provide a positive direct connection between the wall and floor or roof construction capable of resisting a horizontal force equal to 30 percent of the tributary wall weight for all buildings, and 45 percent of

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the tributary wall weight for essential buildings, or a minimum force of 250 pounds per linear foot of wall, whichever is greater.

The required anchorage shall be based on the tributary wall panel assuming simple supports at floors and roof.

EXCEPTION: An alternate design may be approved by the Building Official when justified by well-established principles of mechanics.

B. Special requirements for wall anchors and continuity ties. The steel elements of the wall anchorage systems and continuity ties shall be designed by the allowable stress design method using a load factor of 1.7. The one-third stress increase permitted by Section 1605.3.2 of the California Building Code shall not be permitted for materials using allowable stress design methods.

The strength design specified in Section 1912.1 of the California Building Code, using a load factor of 2.0 in lieu of 1.4 for earthquake loading, shall be used for the design of embedment in concrete.

Wall anchors shall be provided to resist out-of-plane forces, independent of existing shear anchors.

EXCEPTION: Existing cast-in-place shear anchors may be used as wall anchors if the tie element can be readily attached to the anchors and if the registered design professional can establish tension values for the existing anchors through the use of approved as-built plans or testing, and through analysis showing that the bolts are capable of resisting the total shear load while being acted upon by the maximum tension force due to seismic loading. Criteria for analysis and testing shall be determined by the Building Official.

Expansion anchors are not allowed without special approval of the Building Official. Attaching the edge of plywood sheathing to steel ledgers is not considered as complying with the positive anchoring requirements of

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the code; and attaching the edge of steel decks to steel ledgers is not considered as providing the positive anchorage of this code unless testing and analysis are performed which establish shear values for the attachment perpendicular to the edge of the deck.

C. Development of anchor loads into the diaphragm. Development of anchor loads into roof and floor diaphragms shall comply with Section 12.11.2.2.3 of ASCE 7-05.

EXCEPTION: If continuously tied girders are present, then the Maximum spacing of the continuity ties is the greater of the girder spacing or 24 feet.

In wood diaphragms, anchorage shall not be accomplished by use of toenails or nails subject to withdrawal, nor shall wood ledgers, top plates or framing be used in cross-grain bending or cross grain tension. The continuous ties required by Section 12.11.2.2.3 of ASCE 7-05 shall be in addition to the diaphragm sheathing.

Lengths of development of anchor loads in wood diaphragms shall be based on existing field nailing of the sheathing unless existing edge nailing is positively identified on the original construction plans or at the site.

At reentrant corners, continuity collectors may be required for existing return walls not designed as shear walls, to develop into the diaphragm a force equal to the lesser of the rocking or shear capacity of the return wall, or the tributary shear but not exceeding the capacity of the diaphragm. Shear anchors for the return wall shall be commensurate with the collector force. If a truss or beam other than rafters or purlins is supported by the return wall or by a column integral with the return wall, an independent secondary column is required to support the roof or floor members whenever rocking or shear capacity of the return wall is

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governing.

D. Anchorage at pilasters. Anchorage of pilasters shall be designed for the tributary wall anchoring load per Section 18.72.040.A of this code, considering the wall as a two-way slab. The edge of the two-way slab shall be considered “fixed” when there is continuity at pilasters, and considered “pinned” at roof or floor levels. The pilasters or the walls immediately adjacent to the pilasters shall be anchored directly to the roof framing such that the existing vertical anchor bolts at the top of the pilasters are bypassed without causing tension or shear failure at the top of the pilasters.

EXCEPTION: If existing vertical anchor bolts at the top of the pilasters are used for the anchorage, then additional exterior confinement shall be provided.

The minimum anchorage at a floor or roof between the pilasters shall be that specified in Section 18.72.040.A of this code.

E. Symmetry. Symmetry of connectors in the anchorage system is required. Eccentricity may be allowed when it can be shown that all components of forces are positively resisted and justified by calculations or tests.

F. Minimum member size. Wood members used to develop anchorage forces to the diaphragm shall be of minimum 3-inch nominal width for new construction and replacement. All such members must be designed for gravity and earthquake forces as part of the wall anchorage system. For existing structural members, the allowable stresses shall be without the one-third stress increase per Section 18.72.040.B.

G. Combination of anchor types. To repair and retrofit existing buildings, a combination of different anchor types of different behavior or stiffness shall not be permitted. The capacity of the new and existing

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connectors cannot be added.

H. Prohibited anchors. Usage of connectors that were bent or stretched from the intended use shall be prohibited.

I. Crack and damage repairs, evaluation of existing structural alterations. The registered design professional shall report any observed structural conditions and structural damage that have imminent life-safety effects on the buildings and recommend repairs, including alterations such as openings cut in existing wall panels without a building permit. Evaluations and repairs shall be reviewed and approved by the department.

J. Miscellaneous. Existing mezzanines relying on the concrete or masonry walls for vertical or lateral support shall be anchored to the walls for the tributary mezzanine load. Walls depending on the mezzanine for lateral support shall be anchored per Sections 18.72.040.A, 18.72.040.B and 18.72.040.C of this code.

EXCEPTION: Existing mezzanines that have independent lateral and vertical support need not be anchored to the concrete or masonry walls.

Existing interior masonry or concrete walls not designed as shear walls, which extend to the floor above or to the roof diaphragm, shall also be anchored for out-of-plane forces per Sections 18.72.040.A, 18.72.040.B and 18.72.040.C of this code. In the in-plane direction, the walls may be isolated or shall be developed into the diaphragm for a lateral force equal to the lesser of the rocking or shear capacity of the wall, or the tributary shear but not exceeding the diaphragm capacity.

K. Historical buildings. Qualified historical buildings shall be permitted to use alternate building standards or deviations from this Chapter in order to preserve their original or restored architectural

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elements and features. See California Code of Regulations, Title 24, Part 8 (California Historical Building Code) for these standards.

18.72.050 Materials of construction.

All materials permitted by this code, including their appropriate allowable stresses and those existing configurations of materials specified in Chapter 18.68 of this code, may be utilized to meet the requirements of this Chapter.

18.72.060 Information required on construction documents.

A. General. In addition to the seismic analysis required elsewhere in this Chapter, the licensed registered design professional responsible for the seismic analysis of the building shall record the information required by this Section on the approved construction documents.

B. Information required. The construction documents shall accurately reflect the results of the engineering investigation and design and show all pertinent dimensions and sizes for plan review and construction. The following shall be provided:

1. Floor plans and roof plans shall show the existing framing construction, diaphragm construction, proposed wall anchors, crossties and collectors. Existing nailing, anchors, ties and collectors shall also be shown on the plans if these are part of the design, and these structural elements need to be verified in the field.

2. At elevations where there is alterations or damage, the details shall show the roof and floor heights, dimensions of openings, location and extent of existing damage, and proposed repair.

3. Typical concrete or masonry wall sections with wall thickness, height and location of anchors shall be provided.

4. Details shall include the existing and new anchors and the

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method of development of anchor forces into the diaphragm framing, existing and new crossties, existing and new or improved support of the roof, and floor girders at pilasters or walls.

C. Registered design professional of record's statement. The responsible registered design professional of record shall state on the approved construction documents the following:

1. "I am responsible for this building's seismic strengthening design of the tilt-up concrete wall anchorage system in compliance with the minimum seismic resistance standards of Chapter 18.72 of the Long Beach Building Code."

or when applicable:

2. "The Registered Special Inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by Section 1704.1 of the California Building Code."

Section 18. Sections 18.32.310, 18.36.040, 18.36.090, 18.36.091, 18.36.092, and Chapters 18.56 and 18.72 of the Long Beach Municipal Code are hereby repealed.

Section 19. The City Clerk shall certify to the passage of this ordinance by the City Council and cause it to be posted in three (3) conspicuous places in the City of Long Beach, and it shall take effect on the thirty-first (31st) day after it is approved by the Mayor, but in no event prior to January 1, 2008.

I hereby certify that the foregoing ordinance was adopted by the City Council of the City of Long Beach at its meeting of _____, 20___ by the

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following vote:

Ayes: Councilmembers: _____

_____

_____

_____

Noes: Councilmembers: _____

_____

Absent: Councilmembers: _____

_____

_____

City Clerk

Approved: _____ _____
(Date) Mayor

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