BEAC PUBLIC HEARING 1 AMENDMENTS

LOCAL ADOPTION OF THE LATEST CALIFORNIA BUILDING STANDARDS CODE AND UNIFORM HOUSING CODE

March 21, 2022

PREPARED BY

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FOOTNOTE:
1. E = Existing chapter with no changes (omitted from this document)
   A = Altered chapter
   D = Deleted chapter

Please note: Only chapters and their associated sections with known amendments are included in this
document for the sake of brevity. Chapters with anticipated significant amendments have been excluded
from the table of contents and this document, as a whole, and will be addressed in the supporting
documentation for upcoming BEAC meetings. The use of ellipses (…) in this document represent the
omission of text within a chapter or section.

All omitted text is anticipated to remain unchanged and may be found in the 2020 Long Beach Municipal

RATIONALE AND FINDINGS:

A description of the specific rationale and findings for the amendments referenced in this document can be
found in the separate “Findings” document prepared for BEAC Public Hearing 1.
PROPOSED AMENDMENTS:

CHAPTER 18.01
GENERAL PROVISIONS

18.01.030 – Scope.

The provisions of this title shall apply to:

1. The site preparation and the construction, alteration, relocation, enlargement, replacement, repair, equipment, use and occupancy, location, maintenance, removal and demolition of every building or structure or appurtenances connected or attached to such buildings and structures 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 adopted in Chapter 18.40, public utility, towers and poles, mechanical equipment not specifically regulated in this title, and hydraulic flood control structures.

CHAPTER 18.05
SUBMITTAL DOCUMENTS

18.05.030 – Construction documents.

A. Information on building or structure required.

... 

11. When reports are required by this chapter, recommendations included in the approved soils engineering report and engineering geology report shall be incorporated into the grading construction documents, including 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. A copy of the soils engineering report and engineering geology report shall be attached to the approved set of grading construction documents and kept at the job site. Reports shall be submitted to the Building Official for review and approval in, but not limited to, the following circumstances:


b. When projects are located on sites designated as Alquist-Priolo Earthquake (Fault) Studies Zone or Seismic Hazard Zone. Projects located within an earthquake special (fault) studies zone established under Chapter 7.5, Division 2, of the California Public Resources Code or a seismic hazard zone established under Chapter 7.8, Division 2, or the California Public Resources Code, shall demonstrate through accepted geologic seismic studies that the proposed building or 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 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.

Notwithstanding Sections 2621.6 and 2621.7 of the California Public Resources Code to the contrary, the Building Official shall have the authority, as deemed necessary and appropriate, to establish criteria in determining the type of projects that are required to comply with this subsection.
c. When previously unknown adverse soils or geologic conditions, including liquefaction or expansive soils, are revealed prior to or during construction.

d. When buildings or structures are located near or on fills containing decomposable material. No new buildings or structures or additions to existing buildings and structures shall be located within one thousand (1,000) feet 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 registered design professional licensed in the State of California to practice as such. 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 registered design professional shall furnish a signed statement attesting that the building or structure has been constructed in accordance with his or her recommendations as to decomposition gases required herein. No new buildings or structures or additions to existing building or structures shall 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.

CHAPTER 18.40
BUILDING CODE

18.40.010 – Adoption of California Building Code.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2022 Edition of the California Building Code (herein referred to as the “California Building Code”). The California Building Code is Part 2 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is based on the provisions of the 2021 Edition of the International Building Code (herein referred to as the “International Building Code”) as developed by the International Code Council with necessary California amendments. The following appendices of the California Building Code are included: Appendices C, G, I, and P O. The following sections, chapters or appendices of the California Building Code are deleted: Sections 101 through 116 of Chapter 1, Division II, Section 3113 of Chapter 31, and Section 3308 of Chapter 33; Chapters 27, 28, 29, 31A, 31C, 31D, 31E, 31F, 32, and 34; and Appendices A, B, D, E, F, H, J, K, L, M, and N, and O.

The adoption of the California Building Code is subject to the changes, amendments and modifications to said code as provided 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. Such codes and code provisions shall constitute and be known as the Long Beach Building Code. A copy of the California Building Code, printed as code in book form, shall be on file in the Office of the City Clerk.

18.40.020 – Amend CBC Section 201.4—Terms not defined.

Section 201.4 of the 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.
18.40.030 – Amend CBC Sections 202—Intermodal shipping containers.

Section 202 of the California Building Code is amended to add a new definition for “Intermodal Shipping Container” as follows:

INTERMODAL SHIPPING CONTAINER. A six-sided steel unit originally constructed as a general cargo container used for the transport of goods and materials.

18.40.040 – Amend CBC Section 302.1—Classification.

The last two sentences in Section 302.1 of the California Building Code is amended to read as follows:

Where a structure is proposed for a purpose that is not specifically listed in this section or about which there is any question, such structure shall be classified, as determined by the Building Official, in the occupancy it most nearly resembles based on the fire safety and relative hazard. Occupied roofs shall be classified, as determined by the Building Official, in the group that the occupancy most nearly resembles, according to the fire safety and relative hazard, and shall comply with Section 503.1.4.

18.40.050 – Amend CBC 901.2—Fire protection system.

Exception in Section 901.2 of the California Building Code is amended to read as follows:

Exception: Any fire protection or life-safety system not required by this code or the California Fire Code shall be permitted to be installed for complete protection throughout the entire building or structure provided that such system meets the requirements of this code or the California Fire Code. Any fire protection or life-safety system not required by this code or the California Fire Code may be permitted to be installed for partial protection provided the building or structure or portion thereof is separated by fire walls without door or window openings if approved by the Fire Code Official.

18.40.060 – Add CBC Section 901.8—Protection of fire protection systems and equipment.

Section 901.8 is added to Chapter 9 of the California Building Code is to read as follows:

901.8 Protection of fire protection systems and equipment. Fire protection systems and equipment subject to possible vehicular damage shall be adequately protected with guard posts in accordance with Section 312 Vehicle Impact Protection of the California Fire Code, as amended in Chapter 18.48.

18.40.070 – Amend CBC Section 903.1—General.

Section 903.1 of the California Building Code is amended to read as follows:

903.1 General. Automatic sprinkler systems shall comply with this section.

903.1.1 Alternative protection. Alternative automatic fire-extinguishing systems complying with Section 904 shall be permitted in lieu of automatic sprinkler system protection where recognized by the applicable standard and approved by the Fire Code Official.

903.1.2 Existing buildings. An automatic sprinkler system shall be installed in all existing occupancies as required by this section if any of the following occurs:

1. A change in occupancy classification to another occupancy classification that would require an automatic sprinkler system as required by this code for the new occupancy.

2. A determination by the Fire Code Official that an automatic sprinkler system is required to provide a minimum level of public safety.
903.1.3 Partial automatic sprinkler systems. Partial automatic sprinkler systems are not allowed. Where automatic sprinkler systems are required to be installed by this section, any other sections in this code or the California Fire Code, any nationally recognized standards, or are electively installed, the automatic sprinkler system shall be installed throughout the entire building or structure. Partial protection may be allowed provided the building or structure or portion thereof is separated by fire walls without door or window openings if approved by the Fire Code Official.

18.40.080 – Amend CBC 903.2—Where required.

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

903.2 Where required. Approved automatic sprinkler systems in new buildings and structures shall be provided in the locations described in Sections 903.2.1 through 903.2.12 or in new nonresidential buildings and structures where two or more exits are required or exceeds 3,000 square feet (279 m²).

18.40.090 – Add CBC Section 903.3.5.3—Hydraulic calculations margin.

Section 903.3.5.3 is added to Chapter 9 of the California Building Code to read as follows:

903.3.5.3 Hydraulic calculations margin. Fire protection system hydraulic calculations shall include a ten percent (10%) safety margin between the available water supply and the required system supply.

18.40.100 – Add CBC Section 903.3.9.1—Control valve location.

Section 903.3.9.1 is added to Chapter 9 of the California Building Code to read as follows:

903.3.9.1 Control valve location. Fire sprinkler system control valves shall be located within stairway designated as “Number 1”, as required by the Fire Code Official.

18.40.110 – Add CBC Section 903.4.1.1—Signal reporting.

Section 903.4.1.1 is added to Chapter 9 of the California Building Code to read as follows:

903.4.1.1 Signal reporting. All signals shall be transmitted to the remote annunciator and supervising station with the specific location, type and address of each device.

18.40.120 – Amend CBC Section 903.4.2—Alarms.

Section 903.4.2 of the California Building Code is amended to read as follows:

903.4.2 Alarms. One exterior approved audible device, located on the exterior of the building in an approved location, shall be connected to each automatic sprinkler system. Such sprinkler water-flow alarm devices shall be activated by water flow equivalent to the flow of a single sprinkler of the smallest orifice size installed in the system. Where a fire alarm system is installed, actuation of the automatic sprinkler system shall actuate the building fire alarm system. Visible alarm notification appliances shall not be required except when required by Section 907. The exterior alarm device shall be a horn and strobe device, located on the address side of the building, closest to the location of the fire department connection.

903.4.2.1 Alarms. At least one (1) additional horn and strobe device is required on the interior of a building at the main entrance or in a location as approved by the Fire Code Official.

903.4.2.2 Manual pull station. At least one (1) manual pull station is required on the interior of a building at the main entrance or in a location as approved by the Fire Code Official.
18.40.130 – Add CBC Section 903.4.4—Remote annunciator.

Section 903.4.4 is added to Chapter 9 of the California Building Code to read as follows:

903.4.4 Remote annunciator. A remote annunciator shall be provided at the main entrance, the first suite in a multi-suite building, or in a location as approved by the Fire Code Official. The remote annunciator shall have the capability to silence and reset the system by an approved key located in the Knox box or other approved means.

18.40.140 – Add CBC Section 905.1.1—Design.

Section 905.1.1 is added to Chapter 9 of the California Building Code to read as follows:

905.1.1 Design. All standpipe systems, except Class II systems, shall be designed to deliver a minimum of one hundred twenty-five (125) psi at the discharge of all standpipe outlets.

18.40.150 – Amend CBC Section 905.4 Subsection 1—Location of Class I standpipe hose connections.

Subsection 1 of Section 905.4 of the California Building Code is amended to read as follows:

1. In every required stairway, a hose connection shall be provided for each floor level. Hose connection shall be located at the floor landing of each floor, unless otherwise approved by the Fire Code Official. See Section 909.20.2.3 for additional provisions in smokeproof enclosures.

18.40.160 – Add CBC Sections 907.1.6 through 907.1.10—General.

Sections 907.1.6 through 907.1.10 are added to Chapter 9 of the California Building Code to read as follows:

907.1.6 Voluntary. Any fire alarm system not required by this code or the California Fire Code shall be furnished for complete protection and meet all requirements of this code and the California Fire Code, unless approved by the Fire Code Official.

907.1.7 Evacuation. Buildings over 3 stories may be required to provide building evacuation based on the floor of alarm, the floor above and the floor below, in lieu of a general alarm, at the discretion of the Fire Code Official.

907.1.8 Control panels. Fire alarm system control panels, including sprinkler monitoring panels, shall be utilized for connecting and supervising fire alarm and/or fire related equipment only. Security or similar devices shall not be connected to a fire alarm or sprinkler monitoring control panel. The use of control panels capable of this feature is subject to the following:

1. The owner of the facility where the panel is to be installed shall provide an original letter on a company letterhead to the Long Beach Fire Department stating that not now, nor in the future, will security or similar equipment be connected to the fire alarm or sprinkler monitoring control panel.

2. New and/or existing control panels installed after the adoption of this ordinance and found to be in violation of this requirement shall be subject to corrective action as determined by the Fire Code Official.

907.1.9 Remote annunciator. A remote annunciator shall be provided at the main entrance, the first suite in a multi-suite building, or in a location as approved by the Fire Code Official. The remote annunciator shall have the capability to silence and reset the system by an approved key located in the Knox box or other approved means.
907.1.10 Alarms. Where fire alarm systems are installed in nonsprinklered buildings, an exterior horn and strobe device shall be installed and located on the address side of the building closest to the location of the remote annunciator.

18.40.170 – Amend CBC Section 907.3.1 and Exception 2—Duct smoke detectors.

Section 907.3.1 and Exception 2 of Section 907.3.1 of the California Building Code is amended to read as follows:

907.3.1 Duct smoke detectors. Smoke detectors installed in ducts shall be listed for the air velocity, temperature and humidity present in the duct. Duct smoke detectors shall be connected to the building’s fire alarm system or sprinkler monitoring system, when one is installed. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal at a constantly attended location and shall perform the intended fire safety function in accordance with this code and the California Mechanical Code. Duct smoke detectors shall not be used as a substitute for required open area detection.

Exceptions:

1. The supervisory signal at a constantly attended location is not required where above duct smoke detectors activate the building’s alarm notification appliances.

2. In occupancies not required to be equipped with a fire alarm or sprinkler monitoring system, actuation of a duct smoke detector shall activate a visible and an audible signal in an approved location. Duct smoke detector trouble condition shall activate a visible or audible signal in an approved location and shall be identified as an air duct detector trouble.

18.40.180 – Add CBC Section 907.9—Fire alarm upgrade.

Section 907.9 is added to Chapter 9 of the California Building Code to read as follows:

907.9 Fire alarm upgrade. All existing multi-family residential, hotels, motels and high-rise buildings shall upgrade the existing fire alarm system to current code, at the time of replacement of the existing fire alarm control panel.

18.40.190 – Add CBC Section 907.10—Smoke removal system.

Section 907.10 is added to Chapter 9 of the California Building Code to read as follows:

907.10 Firefighter smoke removal system. A natural or mechanical Fire Department approved ventilation system for the removal of products of combustion shall be provided above and below grade on every level, at the discretion of the Fire Code Official, and shall consist of one of the following:

1. Panels or windows in the exterior walls which can be opened remotely from an approved location other than the fire floor. Such venting facilities shall be provided at the rate of twenty square feet per lineal feet of exterior wall in each story and shall be distributed around the perimeter at not more than fifty-foot intervals. Such windows or panels and their controls shall be clearly identified.

   Exception: When a complete automatic fire extinguishing system is installed, windows or panels manually openable from within the fire floor or approved fixed tempered glass may be used in lieu of the remotely operated openable panels and windows. Such windows shall be clearly identified and shall be of the size and spacing called for above.

2. When a complete and approved automatic fire extinguishing system is installed, the mechanical air-handling equipment may be designed to accomplish smoke removal. Under fire conditions, the return and exhaust air shall be moved directly to the outside without recirculation.
to other sections of the building. The air-handling system shall provide a minimum of one exhaust air change each ten minutes for the area involved. The system shall utilize a firefighter smoke exhaust panel located at the main entrance to the building or as required by the Fire Code Official and shall be permanently labeled “Fire Department Smoke Evacuation Use Only”. Operation of the system shall be by the use of a Knox key switch.

3. Any other design which will produce equivalent results as approved by the Fire Code Official.

18.40.200 – Amend CBC Section 910.3—Smoke and heat vents.

Section 910.3 of the California Building Code is amended to read as follows:

910.3 Smoke and heat vents. The design and installation of smoke and heat vents shall be in accordance with Sections 910.3.1 through 910.3.64.

18.40.210 – Add CBC Section 910.3.64—Sprinkler buildings.

Section 910.3.64 is added to Chapter 9 of the California Building Code to read as follows:

910.3.64 Sprinkler buildings. Smoke and heat vents fusible links shall be designed at a minimum of 100 degrees above the temperature rating of the fire sprinklers.

18.40.220 – Add CBC Section 912.1.1—Design.

Section 912.1.1 is added to Chapter 9 of the California Building Code to read as follows:

912.1.1 Design. Fire Department connections, where required, shall be provided with a minimum number of two (2) 2-1/2 inch inlets, regardless of the size of the fire sprinkler system. Where fire protection system demands are in excess of 1,000 gpm, a minimum of four (4) 2-1/2 inch inlets shall be provided.

Hazardous locations, high-rise buildings or where fire protection system demands are in excess of 2,000 gpm, a second fire department connection utilizing four (4) 2-1/2 inch inlets may be required at the discretion of the Fire Code Official.

18.40.230 – Amend CBC Section 912.2.1—Visible location.

Section 912.2.1 of the California Building Code is amended by the addition of the following paragraph to read as follows:

912.2.1 Visible location. Fire department connections shall be located on the address side of buildings or structures and shall be within 150 feet of a public fire hydrant, except as required by the Section 507.5.1.1 of the California Fire Code, or as approved by the Fire Code Official.

18.40.240 – Amend CBC Section 912.4—Access.

Section 912.4 of the California Building Code is amended to read as follows:

912.4 Access. Immediate access to fire department connections shall be maintained at all times and without obstruction by fences, bushes, trees, walls or other fixed or movable object. Access to fire department connections shall be approved by the Fire Code Official.

Fire department connections, where located in landscaping or other similar areas, shall be provided with a minimum 3-foot concrete pad around the fire department connection, and an approved concrete pathway leading to the fire department connection.

18.40.250 – Add CBC Section 1003.8—Protection of means of egress.
Section 1003.8 is added to Chapter 10 of the California Building Code to read as follows:

1003.8 Protection of means of egress. When the Fire Code Official determines that means of egress require protection from possible vehicular damage, crash posts shall be installed in accordance with Section 312 Vehicle Impact Protection of the California Fire Code.

18.40.260 – Add CBC Sections 1011.12.3 and 1011.12.4—Stairway to roof.

Sections 1011.12.3 and 1011.12.4 are added to Chapter 10 of the California Building Code to read as follows:

1011.12.3 Ladder. A fixed ladder shall be provided for access to the hatch or trap door.

1011.12.4 Stairway 1. When a stairway to the roof is required, it shall be designated as “Stairway 1.”

18.40.270 – Amend CBC Section 1507.3.1—Deck requirements.

Section 1507.3.1 of the California Building Code is amended to read as follows:

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

18.40.280 – Amend CBC Section 1612.3—Establishment of flood hazard areas.

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

1612.3 Establishment of flood hazard areas. To establish flood hazard areas, the City 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 (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.

18.40.290 – Amend CBC Section 1612.4—Flood hazard documentation.

Section 1612.4 Items 1.1 and 2.1 of the California Building Code are amended to read as follows:

1.1 The elevation of the lowest floor, including the basement, as required by the lowest floor elevation inspection in Subsection 18.07.050.A.3 of the Long Beach Municipal Code and for the final inspection in Subsection 18.07.050.A.13 of the Long Beach Municipal Code.

2.1 The elevation of the bottom of the lowest horizontal structural member as required by the lowest floor elevation inspection in Subsection 18.07.050.A.3 of the Long Beach Municipal Code and for the final inspection in Subsection 18.07.050.A.13 of the Long Beach Municipal Code.

18.40.300 – Add CBC Sections 1613.5 and 1613.5.1—Amendments to ASCE 7.

Sections 1613.5 and 1613.5.1 are added to Chapter 16 of the California Building Code to read as follows:

1613.5 Amendments to ASCE 7. The provisions of Section 1613.5 shall be permitted as an amendment to the relevant provisions of ASCE 7.

1613.5.1 Values for Vertical Combinations. Modify ASCE 7 Section 12.2.3.1 Exception 3 as follows:
3. Detached one- and two-family dwellings up to two stories in height of light frame construction.

18.40.310 – Add CBC Section 1613.5.2—Wood Diaphragms.

Section 1613.5.2 is added to Chapter 16 of the California Building Code to read as follows:

1613.5.2 Wood Diaphragms. Modify ASCE 7 Section 12.11.2.2.3 as follows:

12.11.2.2.3 Wood Diaphragms. The anchorage of concrete or masonry structural walls to wood diaphragms shall be in accordance with AWC SDPWS 4.1.5.1 and this section. Continuous ties required by this section shall be in addition to the diaphragm sheathing. Anchorage shall not be accomplished by use of toenails or nails subject to withdrawal, nor shall wood ledgers or framing be used in cross-grain bending or cross-grain tension. The diaphragm sheathing shall not be considered effective for providing the ties or struts required by this section.

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

1. The spacing of continuous ties shall not exceed 40 feet. Added chords of diaphragms may be used to form subdiaphragms to transmit the anchorage forces to the main continuous crossties.

2. The maximum diaphragm shear used to determine the depth of the subdiaphragm shall not exceed 75% of the maximum diaphragm shear.

18.40.320 – Add CBC Section 1613.5.3—Structural separation.

Section 1613.5.3 is added to Chapter 16 of the California Building Code to read as follows:

1613.5.3 Structural Separation. Modify ASCE 7 Section 12.12.3 Equation 12.12-1 as follows:

\[
\delta_m = C_d \delta_{max} \quad (12.12-1)
\]

18.40.330 – Add CBC Section 1613.6—Suspended ceiling.

Section 1613.6 is added to Chapter 16 of the California Building Code to read as follows:

1613.6 Suspended Ceilings. Minimum design and installation standards for suspended ceilings shall be determined in accordance with the requirements of Section 2506.2.1 of this code and this section.

1613.6.1 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.

1613.6.2 General. The suspended ceilings and lighting systems shall be limited to 6 feet (1828 mm) below the structural deck unless the lateral bracing is designed by a registered design professional.

1613.6.3 Sprinkler Heads. All sprinkler heads (drops) except fire-resistance-rated floor/ceiling or roof/ceiling assemblies, shall be designed to allow for free movement of the sprinkler pipes with oversize rings, sleeves or adaptors through the ceiling tile. Sprinkler heads and other penetrations shall have a 2 inch (50 mm) oversize ring, sleeve, or adapter through the ceiling tile to allow for free movement of at least 1 inch (25 mm) in all horizontal directions. Alternatively, a swing joint that can accommodate 1 inch (25 mm) of ceiling movement in all horizontal directions is permitted to be provided at the top of the sprinkler head extension.

Sprinkler heads penetrating fire-resistance-rated floor/ceiling or roof/ceiling assemblies shall comply with Section 714 of this code.
1613.6.4 Special Requirements for Means of Egress. Suspended ceiling assemblies located along means of egress serving an occupant load of 30 or more and lobbies accessory to Group A Occupancies shall comply with the following provisions.

1613.6.4.1 General. Ceiling suspension systems shall be connected and braced with vertical hangers attached directly to the structural deck along the means of egress serving an occupant load of 30 or more and at lobbies accessory to Group A Occupancies. Spacing of vertical hangers shall not exceed 2 feet (610 mm) on center along the entire length of the suspended ceiling assembly located along the means of egress or at the lobby.

1613.6.4.2 Assembly Device. All lay-in panels shall be secured to the suspension ceiling assembly with two hold-down clips minimum for each tile within a 4-foot (1219 mm) radius of the exit lights and exit signs.

1613.6.4.3 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 1008.3 of this code.

1613.6.4.4 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.

18.40.340 – Amend CBC Section 1704.6—Structural observations.

Section 1704.6 of the California Building Code is amended to read as follows:

1704.6 Structural observations. Where required by the provisions of Section 1704.6.1, 1704.6.2 or 1704.6.3, the owner or the owner’s authorized agent shall employ a structural observer to perform structural observations. The structural observer shall visually observe locations of structural systems, details and load paths for general conformance to the approved construction documents. Structural observation does not include or waive the responsibility for the inspections or special inspections in Chapter 18.07 of the Long Beach Municipal Code or the special inspections in Section 1705 or other sections of this code. The structural observer shall be one of the following individuals:

1. The registered design professional responsible for the structural design, or

2. A registered design professional designated by the registered design professional responsible for the structural design.

The requirement for structural observation shall be noted and prominently displayed on the front sheet of the approved plans and incorporated into the general notes on the approved plans.

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

The owner or owner’s representative shall coordinate and call a preconstruction meeting between the structural observer, contractors, affected subcontractors and special inspectors. The structural observer shall preside over the meeting. The purpose of the meeting shall be to identify the major structural elements and connections that affect the vertical and lateral load resisting systems of the structure and to review scheduling of the required observations. A record of the meeting shall be included in the report submitted to the Building Official.

Observed deficiencies shall be reported in writing to the owner or owner’s representative, special inspector, contractor and the Building Official. Upon the form prescribed by the Building Official, the structural observer shall submit to the Building Official a written statement at each significant construction stage stating that the site visits have been made and identifying any reported deficiencies which, to the best of the structural observer’s knowledge, have not been resolved. A final report by the
18.40.350 – Amend CBC Section 1704.6.12—Structural observations for seismic resistance.

Section 1704.6.12 of the California Building Code is amended to read as follows:

1704.6.12 Structural observations for seismic resistance. Structural observations shall be provided for those structures assigned to Seismic Design Category D, E or F where one or more of the following conditions exist:

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

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

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

18.40.360 – Amend CBC Section 1705.3—Concrete construction.

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

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

Exceptions: Special inspections and tests shall not be required for:

1. Isolated spread concrete footings of buildings three stories or less above grade plane that are fully supported on earth or rock, where the structural design of the footing is based on a specified compressive strength, f_c, no greater than 2,500 pounds per square inch (psi) (17.2 Mpa) regardless of the compressive strength specified in the construction documents or used in the footing construction.

2. Continuous concrete footings supporting walls of buildings three stories or less above grade plane that are fully supported on earth or rock where:

   2.1. The footings support walls of light-frame construction;
   2.2. The footings are designed in accordance with Table 1809.7; or
   2.3. The structural design of the footing is based on a specified compressive strength, f_c, no greater than 2,500 pounds per square inch (psi) (17.2 Mpa), regardless of the compressive strength specified in the construction documents or used in the footing construction.

3. Nonstructural concrete slabs supported directly on the ground, including prestressed slabs on grade, where the effective prestress in the concrete is less than 150 psi (1.03 Mpa).
4. Concrete patios, driveways and sidewalks, on grade.

18.40.370 – Amend CBC Section 1705.1342—Special inspections for seismic resistance.

Exception 3 of Section 1705.1342 of the California Building Code is amended to read as follows:

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

3.1 Torsional or extreme torsional irregularity.

3.2 Nonparallel systems irregularity.

3.3 Stiffness-soft story or stiffness-extreme soft story irregularity.

3.4 Discontinuity in lateral strength-weak story irregularity.

18.40.380 – Amend CBC Section 1707.1—Alternative test procedure.

Section 1707.1 of the California Building Code is amended by changing the reference to "Section 104.11" to read "Section 18.03.060 of the Long Beach Municipal Code."

18.40.390 – Amend CBC Section 1807.1.4—Permanent wood foundation systems.

Section 1807.1.4 of the California Building Code is amended to read as follows:

1807.1.4 Permanent wood foundation systems. Permanent wood foundation systems shall be designed and installed in accordance with ACW PWF. Lumber and plywood shall be preservative treated in accordance with AWPA U1 (Commodity Specification A, Special Requirement 4.2) and shall be identified in accordance with Section 2303.1.9.1. Permanent wood foundation systems shall not be used for structures assigned to Seismic Design Category D, E or F.

18.40.400 – Amend CBC Section 1807.1.6—Prescriptive design of concrete and masonry foundation walls.

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

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

18.40.410 – Amend CBC Section 1807.2—Retaining walls.

Section 1807.2 of the California Building Code is amended to read as follows:

1807.2 Retaining walls. Retaining walls shall be designed in accordance with Section 1807.2.1 through 1807.2.43. Retaining walls assigned to Seismic Design Category D, E or F shall not be partially or wholly constructed of wood.

18.40.420 – Amend CBC Section 1807.3.1—Limitations.

Section 1807.3.1 of the California Building Code is amended to read as follows:

1807.3.1 Limitations. The design procedures outlined in this section are subject to the following limitations:
1. The frictional resistance for structural walls and slabs on silts and clays shall be limited to one-half of the normal force imposed on the soils by the weight of the footing or slab.

2. Posts embedded in earth shall not be used to provide lateral support for structural or nonstructural materials such as plaster, masonry or concrete unless bracing is provided that develops the limited deflection required.

Wood poles shall be treated in accordance with AWPA U1 for sawn timber posts (Commodity Specification A, Use Category 4B) and for round timber posts (Commodity Specification B, Use Category 4B). Wood poles and posts embedded in direct contact with soil shall not be used for structures assigned to Seismic Design Category D, E or F.

Exception: Wood poles and posts embedded in direct contact with soil may be used to support nonhabitable, nonoccupiable structures such as fences when approved by the Building Official.

18.40.430 – Amend CBC Section 1809.3—Stepped footings.

Section 1809.3 of the California Building Code is amended to read as follows:

1809.3 Stepped footings. The top surface of footings shall be level. The bottom surface of footings shall be permitted to have a slope not exceeding one unit vertical in 10 units horizontal (10-percent slope). Footings shall be stepped where it is necessary to change the elevation of the top surface of the footing or where the surface of the ground slopes more than one unit vertical in 10 units horizontal (10-percent slope).

For structures assigned to Seismic Design Category D, E or F, the stepping requirement shall also apply to the top surface of grade beams supporting walls. Footings shall be reinforced with four 1/2-inch diameter (12.7 mm) deformed reinforcing bars. Two bars shall be placed at the top and bottom of the footings as shown in Figure 1809.3.

18.40.440 – Amend CBC Section 1809.7 and Table 1809.7—Prescriptive footings for light-frame construction.

Section 1809.7 and Table 1809.7 of the California Building Code are amended to read as follows:
1809.7 Prescriptive footings for light-frame construction. Where a specific design is not provided, concrete or masonry-unit footings supporting walls of light-frame construction shall be permitted to be designed in accordance with Table 1809.7. Light-frame construction using prescriptive footings in Table 1809.7 shall not exceed one story above grade plane for structures assigned to Seismic Design Category D, E or F.

**TABLE 1809.7**

<table>
<thead>
<tr>
<th>NUMBER OF FLOORS SUPPORTED BY THE FOOTING</th>
<th>WIDTH OF FOOTING (inches)</th>
<th>THICKNESS OF FOOTING (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>12</td>
<td>6</td>
</tr>
<tr>
<td>2</td>
<td>15</td>
<td>6</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
<td>8</td>
</tr>
</tbody>
</table>

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

a. Depth of footings shall be in accordance with Section 1809.4.
b. The ground under the floor shall be permitted to be excavated to the elevation of the top of the footing.
c. Not Adopted.
d. See Section 1908 for additional requirements for concrete footings of structures assigned to Seismic Design Category C, D, E or F.
e. For thickness of foundation walls, see Section 1807.1.6.
f. Footings shall be permitted to support a roof addition to the stipulated number of floors. Footings supporting roof only shall be as required for supporting one floor.

18.40.450 – Amend CBC Section 1809.12—Timber footings.

Section 1809.12 of the California Building Code is amended to read as follows:

1809.12 Timber footings. Timber footings shall be permitted for buildings of Type V construction and as otherwise approved by the Building Official. Such footings shall be treated in accordance with AWPA U1 (Commodity Specification A, Use Category 4B). Treated timbers are not required where placed entirely below permanent water level, or where used as capping for wood piles that project above the water level over submerged or marsh lands. The compressive stresses perpendicular to grain in untreated timber footings supported on treated piles shall not exceed 70 percent of the allowable stresses for the species and grade of timber as specified in the ANSI/AWC NDS. Timber footings shall not be used in structures assigned to Seismic Design Category D, E or F.

18.40.460 – Amend CBC Section 1810.3.2.4—Timber.

Section 1810.3.2.4 of the California Building Code is amended to read as follows:

1810.3.2.4 Timber. Timber deep foundation elements shall be designed as piles or poles in accordance with ANSI/AWC NDS. Round timber elements shall conform to ASTM D 25. Sawn timber elements shall conform to DOC PS-20. Timber deep foundation elements shall not be used in structures assigned to Seismic Design Category D, E or F.

18.40.470 – Amend CBC Sections 1905.1 and 1905.1.7—ACI 318.

Sections 1905.1 and 1905.1.7 of the California Building Code are amended to read as follows:

1905.1 General. The text of ACI 318 shall be modified as indicated in Sections 1905.1.1 through 1905.1.11.

1905.1.7 ACI 318, Section 14.1.4. Delete ACI 318, Section 14.1.4, and replace with the following:

14.1.4 – Plain concrete in structures assigned to Seismic Design Category C, D, E or F.
14.1.4.1 – Structures assigned to Seismic Design Category C, D, E or F shall not have elements of structural plain concrete, except as follows:

(a) Concrete used for fill with a minimum cement content of two (2) sacks of Portland cement or cementious material per cubic yard.

(b) Isolated footings of plain concrete supporting pedestals or columns are permitted, provided the projection of the footing beyond the face of the supported member does not exceed the footing thickness.

(c) Plain concrete footings supporting walls are permitted provided the footings have at least two continuous longitudinal reinforcing bars. Bars shall not be smaller than No. 4 and shall have a total area of not less than 0.002 times the gross cross-sectional area of the footing. A minimum of one bar shall be provided at the top and bottom of the footing. Continuity of reinforcement shall be provided at corners and intersections.

Exception: Detached one- and two-family dwellings three stories or less in height and constructed with stud-bearing walls, are permitted to have plain concrete footings with at least two continuous longitudinal reinforcing bars not smaller than No. 4 and are permitted to have a total area of longitudinal reinforcement less than 0.002 times the gross cross-sectional area of the footing.

18.40.480 – Add CBC Sections 1905.1.9 thru 1905.1.11, ACI 318.

Sections 1905.1.9 thru 1905.1.11 are added to Chapter 19 of the California Building Code to read as follows:

1905.1.9 ACI 318, Section 18.7.5. Modify ACI 318, Section 18.7.5, by adding Section 18.7.5.87 and 18.7.5.98 as follows:

18.7.5.87 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 18.7.5.1, Items (a) through (c), over the full height of the member.

18.7.5.98 – At any section where the design strength, \( \phi P_n \), of the column is less than the sum of the shears \( V_e \) computed in accordance with ACI 318 Sections 18.7.6.1 and 18.6.5.1 for all the beams framing into the column above the level under consideration, transverse reinforcement as specified in ACI 318 Sections 18.7.5.1 through 18.7.5.3 shall be provided. For beams framing into opposite sides of the column, the moment components are permitted to be assumed to be of opposite sign. For the determination of the design strength, \( \phi P_n \), of the column, these moments are permitted to be assumed to result from the deformation of the frame in any one principal axis.

1905.1.10 ACI 318, Section 18.10.4. Modify ACI 318, Section 18.10.4, by adding Section 18.10.4.76 as follows:

18.10.4.76 – Walls and portions of walls with \( Pu > 0.35Po \) shall not be considered to contribute to the calculated shear strength of the structure for resisting earthquake-induced forces. Such walls shall conform to the requirements of ACI 318 Section 18.14.

1905.1.11 ACI 318, Section 18.12.6. Modify ACI 318, by adding Section 18.12.6.2 as follows:

18.12.6.2 Collector and boundary elements in topping slabs placed over precast floor and roof elements shall not be less than 3 inches (76 mm) or 6 \( db \) in thickness, where \( db \) is the diameter of the largest reinforcement in the topping slab.
18.40.490 – Amend CBC Section 2304.10.24—Fastener requirements.

Section 2304.10.24 of the California Building Code is amended to read as follows:

2304.10.21 Fastener requirements. Connections for wood members shall be designed in accordance with the appropriate methodology in Section 2301.2. The number and size of fasteners connecting wood members shall not be less than that set forth in Table 2304.10.24. Staple fasteners in Table 2304.10.24 shall not be used to resist or transfer seismic forces in structures assigned to Seismic Design Category D, E or F.

Exception: Staples may be used to resist or transfer seismic forces when the allowable shear values are substantiated by cyclic testing and approved by the Building Official.

18.40.500 – Add CBC Section 2304.10.3.12.1—Quality of nails.

Section 2304.10.3.12.1 is added to Chapter 23 of the California Building Code to read as follows:

2304.10.3.12.1 Quality of Nails. In Seismic Design Category D, E or F, mechanically driven nails used in wood structural panel shear walls shall meet the same dimensions as that required for hand-driven nails, including diameter, minimum length-penetration and minimum head diameter. Clipped head or box nails are not permitted in new construction. The allowable design value for clipped head nails in existing construction may be taken at no more than shall be multiplied by the nail-head-area ratio of the clipped head nails to that of the same size hand-driven nails.

18.40.510 – Amend CBC Section 2304.12.2.85—Wood used in retaining walls and cribs.

Section 2304.12.2.85 of the California Building Code is amended to read as follows:

2304.12.2.85 Wood used in retaining or crib walls shall be preservative treated in accordance with AWPA U1 for soil and fresh water use. Wood shall not be used in retaining or crib walls for structures assigned to Seismic Design Category D, E or F.

18.40.520 – Add CBC Section 2305.4—Hold-down connectors.

Section 2305.4 is added to Chapter 23 of the California Building Code to read as follows:

2305.4 Hold-down connectors. In Seismic Design Category D, E or F, hold-down connectors shall be designed to resist shear wall overturning moments using approved cyclic load values or 75 percent of the allowable seismic load values that do not consider cyclic loading of the product. Connector bolts into wood framing shall require steel plate washers on the post on the opposite side of the anchorage device. Plate size shall be a minimum of 0.229 inch by 3 inches by 3 inches (5.82 mm by 76 mm by 76 mm) in size. Hold-down connectors shall be tightened to finger tight plus one half (1/2) wrench turn just prior to covering the wall framing.

18.40.530 – Amend CBC Section 2306.2—Wood-frame diaphragms.

Section 2306.2 of the California Building Code is amended to read as follows:

2306.2 Wood-frame diaphragms. Wood-frame diaphragms shall be designed and constructed in accordance with AWC SDPWS. Where panels are fastened to framing members with staples, requirements and limitations of AWC SDPWS shall be met and the allowable shear values set forth in Table 2306.2(1) or 2306.2(2) shall only be permitted for structures assigned to Seismic Design Category A, B, or C.
Exception: Allowable shear values where panels are fastened to framing members with staples may be used if such values are substantiated by cyclic testing and approved by the building official.

The allowable shear values in Tables 2306.2(1) and 2306.2(2) are permitted to be increased 40 percent for wind design.

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

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

18.40.540 – Amend CBC Section 2306.3—Wood-frame shear walls.

Section 2306.3 of the California Building Code is amended to read as follows:

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

1. Wood structural panel thickness for shear walls shall not be less than 3/8 inch thick and studs shall not be spaced at more than 16 inches on center.

2. The maximum nominal unit shear capacities for 3/8 inch wood structural panels resisting seismic forces in structures assigned to Seismic Design Category D, E or F is 400 pounds per linear foot (plf).

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

3. Nails shall be placed not less than 1/2 inch in from the panel edges and not less than 3/8 inch from the edge of the connecting members for shear greater than 350 plf using ASD or 500 plf using LRFD. Nails shall be placed not less than 3/8 inch from panel edges and not less than 1/4 inch from the edge of the connecting members for shears of 350 plf or less using ASD or 500 plf or less using LRFD.

4. Table 4.3B application is not allowed for structures assigned to Seismic Design Category D, E, or F.

For structures assigned to Seismic Design Category D, E, or F, application of Table 4.3C of AWC SDPWS shall not be used below the top level in a multi-level building for structures.

Where panels are fastened to framing members with staples, requirements and limitations of AWC SDPWS shall be met and the allowable shear values set forth in Table 2306.3(1), 2306.3(2) or 2306.3(3) shall only be permitted for structures assigned to Seismic Design Category A, B, or C.

Exception: Allowable shear values where panels are fastened to framing members with staples may be used if such values are substantiated by cyclic testing and approved by the building official.

The allowable shear values in Tables 2306.3(1) and 2306.3(2) are permitted to be increased 40 percent for wind design. Panels complying with ANSI/APA PRP-210 shall be permitted to use design values for Plywood Siding in the AWC SDPWS.

18.40.550 – Add CBC Section 2307.2—Wood-frame shear walls.

Section 2307.2 is added to the California Building Code to read as follows:
2307.2 Wood-frame shear walls. Wood-frame shear walls shall be designed and constructed in accordance with Section 2306.3 as applicable.

18.40.560 – Amend CBC Table 2308.6.1—Wall bracing requirements.

Table 2308.6.1 of the California Building Code is amended to read as follows:
<table>
<thead>
<tr>
<th>SEISMIC DESIGN CATEGORY</th>
<th>STORY CONDITION (SEE SECTION 2308.2)</th>
<th>MAXIMUM SPACING OF BRACED WALL LINES</th>
<th>BRACED PANEL LOCATION, SPACING (O.C.) AND MINIMUM PERCENTAGE (K)</th>
<th>MAXIMUM DISTANCE OF BRACED WALL PANELS FROM EACH END OF BRACED WALL LINE</th>
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</thead>
<tbody>
<tr>
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<td></td>
<td>Bracing method&lt;sup&gt;a&lt;/sup&gt;</td>
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<tr>
<td>A and B</td>
<td></td>
<td>35'-0&quot;</td>
<td>Each end and ≤ 25'-0&quot; o.c.</td>
<td>Each end and ≤ 25'-0&quot; o.c.</td>
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<td>C</td>
<td></td>
<td>35'-0&quot;</td>
<td>Each end and ≤ 25'-0&quot; o.c.</td>
<td>Each end and ≤ 25'-0&quot; o.c.</td>
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<tr>
<td>D and E</td>
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<td>Each end and ≤ 25'-0&quot; o.c.</td>
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<td>Each end and ≤ 25'-0&quot; o.c.</td>
<td>Each end and ≤ 25'-0&quot; o.c.</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.
NP = Not Permitted.

a. This table specifies minimum requirements for braced wall panels along interior or exterior braced wall lines.

b. See Section 2308.6.3 for full description of bracing methods.

c. For Method GB, gypsum wallboard applied to framing supports that are spaced at 16 inches on center.

d. The required lengths shall be doubled for gypsum board applied to only one face of a braced wall panel.

e. Percentage shown represents the minimum amount of bracing required along the building length (or wall length if the structure has an irregular shape).

f. DWB, SFB, PBS, and HPS wall braces are not permitted in Seismic Design Categories D or E.

g. Minimum length of panel bracing of one face of the wall for WSP sheathing shall be at least 4"-0" long on both faces of the wall for GB or PCP sheathing shall be at least 6"-0" long. Low ratio shall not exceed 2:1. Wall framing to which sheathing is applied shall be nominal 2 inch wide firced 1 1/4 inch (32 mm) or larger members and spaced a maximum of 16 inches on center. Braced wall panel construction types shall not be mixed within a braced wall line.

h. WSP sheathing shall be a minimum of 1/2" thick nailed with 8d common placed 3/8 inches from panel edges and spaced not more than 6 inches on center and 12 inches on center along intermediate framing members.
18.40.570 – Amend CBC Section 2308.6.5.1 and Figure 2308.6.5.1—Alternate braced wall *(ABW)*.

Section 2308.6.5.1 and Figure 2308.6.5.1 of the California Building Code are amended to read as follows:

2308.6.5.1 Alternate braced wall *(ABW)*. An ABW shall be constructed in accordance with this section and Figure 2308.6.5.1. In one-story buildings, each panel shall have a length of not less than 2 feet 8 inches (813 mm) and a height of not more than 10 feet (3048 mm). Each panel shall be sheathed on one face with 3/8-inch (3.2 mm) minimum-thickness wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Table 2304.10.1 and blocked at wood structural panel edges. For structures assigned to Seismic Design Category D or E, each panel shall be sheathed on one face with 15/32-inch minimum-thickness (11.9 mm) wood structural panel sheathing nailed with 8d common nails spaced 3 inches on panel edges, 3 inches at intermediate supports. Two anchor bolts installed in accordance with Section 2308.3.1 shall be provided in each panel. Anchor bolts shall be placed at each panel outside quarter points. Each panel end stud shall have a hold-down device fastened to the foundation, capable of providing an approved uplift capacity of not less than 1,800 pounds (8006 N). The hold-down device shall be installed in accordance with the manufacturer’s recommendations. The ABW shall be supported directly on a foundation or on floor framing supported directly on a foundation that is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom. Where the continuous foundation is required to have a depth greater than 12 inches (305 mm), a minimum 12-inch by 12-inch (305 mm by 305 mm) continuous footing is permitted at door openings in the braced wall line. This continuous footing shall be reinforced with not less than one No. 4 bar top and bottom. This reinforcement shall be lapped 24 inches (610 mm) with the reinforcement required in the continuous foundation located directly under the braced wall line.

Where the ABW is installed at the first story of two-story buildings, the wood structural panel sheathing shall be provided on both faces, three anchor bolts shall be placed at one-quarter points and tie-down device uplift capacity shall be not less than 3,000 pounds (13 344 N).

18.40.580 – Amend CBC Section 2308.6.5.2 and Figure 2308.6.5.2—Portal frame with hold-downs *(PFH)*.

Section 2308.6.5.2 and Figure 2308.6.5.2 of the California Building Code are amended to read as follows:
2308.6.5.2 Portal frame with hold-downs (PFH). A PFH shall be constructed in accordance with this section and Figure 2308.6.5.2. The adjacent door or window opening shall have a full-length header.

In one-story buildings, each panel shall have a length of not less than 16 inches (406 mm) and a height of not more than 10 feet (3048 mm). Each panel shall be sheathed on one face with a single layer of 3/8-inch (9.5 mm) minimum-thickness wood structural panel sheathing nailed with 8d common or galvanized box nails in accordance with Figure 2308.6.5.2. For structures assigned to Seismic Design Category D or E, each panel shall be sheathed on one face with 15/32-inch minimum thickness (11.9 mm) wood structural panel sheathing nailed with 8d common nails spaced 3 inches on panel edges, 3 inches at intermediate supports and in accordance with Figure 2308.6.5.2. The wood structural panel sheathing shall extend up over the solid sawn or glued-laminated header and shall be nailed in accordance with Figure 2308.6.5.2. A built-up header consisting of at least two 2-inch by 12-inch (51 mm by 305 mm) boards, fastened in accordance with Item 2624 of Table 2304.10.24 shall be permitted to be used. A spacer, if used, shall be placed on the side of the built-up beam opposite the wood structural panel sheathing. The header shall extend between the inside faces of the first full-length outer studs of each panel. The clear span of the header between the inner studs of each panel shall be not less than 6 feet (1829 mm) and not more than 18 feet (5486 mm) in length. A strap with an uplift capacity of not less than 1,000 pounds (4,400 N) shall fasten the header to the inner studs opposite the sheathing. One anchor bolt not less than 5/8-inch (15.9 mm) diameter and installed in accordance with Section 2308.3.1 shall be provided in the center of each sill plate. The studs at each end of the panel shall have a hold-down device fastened to the foundation with an uplift capacity of not less than 3,500 pounds (15 570 N).

Where a panel is located on one side of the opening, the header shall extend between the inside face of the first full-length stud of the panel and the bearing studs at the other end of the opening. A strap with an uplift capacity of not less than 1,000 pounds (4400 N) shall fasten the header to the bearing studs. The bearing studs shall also have a hold-down device fastened to the foundation with an uplift capacity of not less than 1,000 pounds (4400 N). The hold-down devices shall be an embedded strap type, installed in accordance with the manufacturer’s recommendations. The PFH panels shall be supported directly on a foundation that is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom. Where the continuous foundation is required to have a depth greater than 12 inches (305 mm), a minimum 12-inch by 12-inch (305 mm by 305 mm) continuous footing is permitted at door openings in the braced wall line. This continuous footing shall be reinforced with not less than one No. 4 bar top and bottom. This reinforcement shall be lapped not less than 24 inches (610 mm) with the reinforcement required in the continuous foundation located directly under the braced wall line.

Where a PFH is installed at the first story of two-story buildings, each panel shall have a length of not less than 24 inches (610 mm).
18.40.590 – Amend CBC Section 2308.6.8.1—Foundation requirements.

Section 2308.6.8.1 of the California Building Code is amended to read as follows:

2308.6.8.1 Foundation requirements. Braced wall lines shall be supported by continuous foundations.

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

For structures in Seismic Design Categories D and E, exterior braced wall panels shall be in the same plane vertically with the foundation or the portion of the structure containing the offset shall be designed in accordance with accepted engineering practice and Section 2308.1.1.

18.40.600 – Amend CBC Section 2308.6.9—Attachment of sheathing.

Section 2308.6.9 of the California Building Code is amended to read as follows:

2308.6.9 Attachment of sheathing. Fastening of braced wall panel sheathing shall not be less than that prescribed in Tables 2308.6.1 or 2304.10.24. Wall sheathing shall not be attached to framing members by adhesives. Staple fasteners in Table 2304.10.24 shall not be used to resist or transfer seismic forces in structures assigned to Seismic Design Category D, E or F.

Exception: Staples may be used to resist or transfer seismic forces when the allowable shear values are substantiated by cyclic testing and approved by the Building Official.
All braced wall panels shall extend to the roof sheathing and shall be attached to parallel roof rafters or blocking above with framing clips (18 gauge minimum) spaced at maximum 24 inches (6096 mm) on center with four 8d nails per leg (total eight 8d nails per clip). Braced wall panels shall be laterally braced at each top corner and at maximum 24 inches (6096 mm) intervals along the top plate of discontinuous vertical framing.

18.40.610 – Amend CBC Section 2503.1—Inspection.

Section 2503.1 of the California Building Code is amended to read as follows:

2503.1 Inspection. Lath, gypsum board and gypsum panel products shall be inspected in accordance with Section 18.07.050 of the Long Beach Municipal Code.

18.40.620 – Amend CBC Section 3101.1—Intermodal shipping containers.

Section 3101.1 of the California Building Code is amended to read as follows:

3101.1 Scope. The provisions of this chapter shall govern special building construction including膜brane structures, temporary structures, pedestrian walkways and tunnels, automatic vehicular gates, awnings and canopies, marquees, signs, towers, antennas, relocatable buildings, swimming pool enclosures and safety devices, solar energy systems, and intermodal shipping containers.

18.40.640 – Amend CBC Chapter 35—Intermodal shipping containers.

Chapter 35 of the California Building Code is amended to add ISO standards to read as follows:

CHAPTER 35
REFERENCED STANDARDS

<table>
<thead>
<tr>
<th>ISO</th>
<th>Title</th>
<th>Referenced in code section number</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 1496-1:2013</td>
<td>Series 1 Freight Containers – Specification and Testing – Part 1: General Cargo Containers for General Purposes</td>
<td>Table 3114.8.5.3</td>
</tr>
<tr>
<td>ISO 6346:1995, with Amendment 3: 2012</td>
<td>Freight Containers – Coding, Identification and marking</td>
<td>3114.3</td>
</tr>
<tr>
<td>ISO 668:2013</td>
<td>Series 1 Freight Containers – Classifications, dimensions and ratings</td>
<td>Table 3114.8.5.3</td>
</tr>
</tbody>
</table>

18.40.650 – Amend CBC Section G101.3—Flood hazard eScope.

Section G101.3 of the California Building Code is amended to read as follows:

G101.3 Scope. The provision of this appendix shall apply to all proposed development in a flood hazard area established in Section 1612 of this code, including certain building work exempt from permit under Section 18.04.020 of the Long Beach Municipal Code.

18.40.660 – Amend CBC Section G101.4—Flood hazard vViolation.

Section G101.4 of the California Building Code is amended to read as follows:
G101.4 Violations. Any violation of a provision of this appendix, or failure to comply with a permit or variance issued pursuant to this appendix or any requirement of this appendix, shall be handled in accordance with Chapter 18.09 of the Long Beach Municipal Code.

18.40.670 – Add CBC Section G101.65—Disclaimer of liability.

Section G101.65 is added to the California Building Code to read as follows:

G101.65 Warning and disclaimer of liability. The degree of flood protection required by this appendix is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on occasion. Flood heights may be increased by manmade or natural causes. This appendix does not imply that land outside areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This appendix shall not create liability on the part of the City of Long Beach, any officer or employee thereof, the State of California, the Federal Insurance Administration, or the Federal Emergency Management Agency, for any flood damages that result from reliance on this appendix or any administrative decision made hereunder.

18.40.680 – Add Amend CBC Section G101.56—Designation of local floodplain administrator.

Section G101.56 of the California Building Code is amended to read as follows:

G101.56 Designation of local floodplain administrator. The Building Official and City Engineer are hereby designated to administer and implement this appendix by granting or denying permits in accordance with its provisions and the Long Beach Municipal Code.

18.40.690 – Amend CBC Section G1032.1—General.

Item 10 of Section G1032.1 of the California Building Code is amended to read as follows:

10. Certain building work exempt from permit under Section 18.04.020 of the Long Beach Municipal Code and other buildings and development activities.

18.40.700 – Amend CBC Section G1032.2—Establishment of flood hazard areas.

Section G1032.2 of the California Building Code is amended to read as follows:

G1032.2 Establishment of flood hazard areas. Flood hazard areas are established in Section 1612.3 of this code and by the Federal Insurance Administration of the Federal Emergency Management Agency (FEMA), in a scientific and engineering report entitled "The Flood Insurance Study for the City of Long Beach", dated July 6, 1998, with accompanying Flood Insurance Rate Map (FIRMs), and all subsequent amendments and/or revisions, are hereby adopted by reference and declared to be a part of this appendix. This flood insurance study and attendant mapping is the minimum area of applicability of this appendix and may be supplemented by studies for other areas which allow implementation of this appendix and which are recommended to the City Council by the City Engineer. The Flood Insurance Study and FIRMs are on file in the office of the Department of Public Works, 411 West Ocean Boulevard, Long Beach, California 90802.

18.40.710 – Add CBC Section G1032.3—Interpretation of FIRM boundaries.

Section G1032.3 is added to the California Building Code to read as follows:

G1032.3 Interpretation of FIRM boundaries. The City Engineer shall make interpretations where needed as to the exact location of the boundaries of flood hazard areas where there appears to be a
conflict between a mapped boundary and actual field conditions. The applicant contesting the boundaries shall be given a reasonable opportunity to appeal the interpretation as provided for in Section G1065.

18.40.720 – Amend CBC Section G1043.3—Flood hazard determination of design flood elevation.

Item 2 of Section G1043.3 of the California Building Code is amended to read as follows:

2. Determine the design flood elevation in accordance with accepted hydrologic and hydraulic engineering techniques. Such analyses shall be performed and sealed by a registered design professional. Studies, analyses, and computations shall be submitted in sufficient detail to allow review and approval by the City Engineer. The accuracy of data submitted for such determination shall be the responsibility of the applicant.

18.40.730 – Amend CBC Section G1043.5—Floodway encroachment.

Section G1043.5 of the California Building Code is amended to read as follows:

G1043.5 Floodway encroachment. Prior to issuing a permit for any floodway encroachment, including fill, new construction, substantial improvements and other development or land-disturbing activity, the City Engineer shall require submission of a certification, prepared by a registered design professional, along with supporting technical data, demonstrating that such development will not cause any increase of the base flood level.

18.40.740 – Amend CBC Sections G1043.6 and G1043.6.1—Watercourse alteration and engineering analysis.

Sections G1043.6 and G1043.6.1 of the California Building Code are amended to read as follows:

G1043.6 Watercourse alteration. Prior to issuing of a permit for any alteration or relocation of any watercourse, the City Engineer shall provide notification of the proposal to the appropriate authorities of all adjacent government jurisdictions, as well as the California Department of Water Resources. A copy of the notification shall be maintained in the permit records and submitted to FEMA.

G1043.6.1 Engineering analysis. The City Engineer shall require submission of an engineering analysis, prepared by a registered design professional, demonstrating that the flood-carrying capacity of the altered or relocated portion of the watercourse will not be decreased. Such watercourses shall be maintained in a manner that preserves the channel’s flood-carrying capacity.

18.40.750 – Amend CBC Section G1043.7—Alterations in coastal areas.

Section G1043.7 of the California Building Code are amended to read as follows:

G1043.7 Alterations in coastal areas. Prior to issuing a permit for any alteration of sand dunes and mangrove stands in coast high-hazard areas and coastal A zones, the City Engineer shall require submission of an engineering analysis, prepared by a registered design professional, demonstrating that the proposed alteration will not increase the potential for flood damage.

18.40.760 – Add CBC Section G1043.110—Letter of map revision.

Section G1043.110 is added to the California Building Code to read as follows:

G1043.110 Letter of Map Revision. Within 6 months of information becoming available or project completion, whichever comes first, the City Engineer shall submit technical or scientific data to FEMA for a Letter of Map Revision pursuant to the requirement of Part 65 and 65.3 of Title 44 of the Code of Federal Regulations.
18.40.770 – Amend CBC Section G1054.4—Flood hazard eExpiration.

Section G1054.4 of the California Building Code is amended to read as follows:

G1054.4 Expiration. Section 18.04.060 of the Long Beach Municipal Code shall govern when a permit becomes invalid or expired.

18.40.780 – Amend CBC Section G1065.1—Flood hazard gGeneral variance.

Section G1065.1 of the California Building Code is amended to read as follows:

G1065.1 General. The Board of Examiners, Appeals and Condemnation (hereinafter referred to as “board of appeals” in this appendix) established pursuant to Chapter 18.10 of the Long Beach Municipal Code shall hear and decide requests for variances. The board of appeals shall base its determination on technical justifications and has the right to attach such conditions to variances as it deems necessary to further the purposes and objectives of this appendix and Section 1612.

Any person aggrieved by the decision of the board of appeal may, within ten (10) days from the date the aggrieved party is notified in writing of the decision, appeal such decision to the City Council by filing a written notice thereof with the City Clerk. The City Council's decision shall be reduced to writing and shall be served by mail on the aggrieved party within ten (10) days after all evidence has been received by the City Council. Upon consideration of the factors of Section G105.6 and the purposes of this appendix, the City Council may attach such conditions to the granting of variances as it deems necessary to further the purposes of this appendix. The decision of the City Council shall be final.

18.40.790 – Amend CBC Section G1065.2—Flood hazard rRecords.

Section G1065.2 of the California Building Code is amended to read as follows:

G1065.2 Records. The Building Official shall maintain a permanent record of all variance actions, including justification for their issuance. The City Engineer shall report any variances issued in its report submitted to FEMA.

18.40.800 – Amend CBC Section G1065.7—Flood hazard cConditions for issuance.

Item 5 of Section G1065.7 of the California Building Code is amended to read as follows:

5. Notification to the applicant in writing over the signature of the Building Official that the issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as $25 for $100 of insurance coverage, and that such construction below the base flood level increases risks to life and property. Prior to the issuance of a permit, a copy of the notice shall be recorded by the applicant in the Office of the Los Angeles County Recorder and shall be recorded in a manner so that it appears in the chain of title of the affected parcel of land.

18.40.810 – Amend CBC Section G102204.1 General definitions.

Section G102204.1 of the California Building Code is amended to read as follows:

G204.1 General. The following words and terms shall, for the purpose of this appendix, have the meanings shown herein. Refer to Chapter 2 of this code or Chapter 18.02 of the Long Beach Municipal Code for general definitions.
CHAPTER 18.41
RESIDENTIAL CODE

18.41.010 – Adoption of California Residential Code.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2022 Edition of the California Residential Code (herein referred to as the “California Residential Code”). The California Residential Code is Part 2.5 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is based on the provisions of the 2021 Edition of the International Residential Code (herein referred to as the “International Residential Code”) as developed by the International Code Council with necessary California amendments. The following appendices of the California Residential Code are included: Appendices H, Q, and X. The following sections, chapters, parts or appendices of the California Residential Code are deleted: Sections R101 through R114 of Chapter 1, Division II; Chapters 11 through 43, Parts IV through VIII; and Appendices A through G, I through P, and R through W, and Y.

The adoption of the California Residential Code is subject to the changes, amendments and modifications to said code as provided 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. Such codes and code provisions shall constitute and be known as the Long Beach Residential Code. A copy of the California Residential Code, printed as code in book form, shall be on file in the Office of the City Clerk.

18.41.020 – Amend CRC Section 201.4—Terms not defined.

Section R201.4 of the California Residential Code is amended to read as follows:

R201.4 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.

18.41.030 – Amend CRC Section R301.1.3.2—Woodframe structures.

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

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

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

18.41.040 – Amend CRC Table R301.2(4) and footnote g—Climatic and Geographic Design Criteria.

Table R301.2(4) and footnote g of the California Residential Code are amended to read as follows:

<table>
<thead>
<tr>
<th>TABLE R301.2(4)</th>
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</thead>
<tbody>
<tr>
<td>CLIMATIC AND GEOGRAPHIC DESIGN CRITERIA</td>
</tr>
</tbody>
</table>

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Fire Department: Fire Prevention Bureau Draft Version: 03/21/2022
Department of Public Works
City Manager: Office of Sustainability
18.41.050 – Amend CRC Section R301.2.2.6—Irregular buildings.

Items 1, 3 and 5 of Section R301.2.2.6 of the California Residential Code are amended to read as follows, including the removal of the exception in each of the items:

1. Shear wall or braced wall offsets out of plane. Conditions where exterior shear wall lines or braced wall panels are not in one plane vertically from the foundation to the uppermost story in which they are required.

3. Shear wall or braced wall offsets in plane. Conditions where the end of a braced wall panel occurs over an opening in the wall below.

5. Floor level offset. Conditions where portions of a floor level are vertically offset.

18.41.060 – Add CRC Section R301.2.2.11—Anchorage of Mechanical, Electrical, or Plumbing Components and Equipment.

Section R301.2.2.11 is added to Chapter 3 of the California Residential Code to read as follows:

R301.2.2.11 Anchorage of Mechanical, Electrical, or Plumbing Components and Equipment. Mechanical, electrical, or plumbing components and equipment shall be anchored to the structure. Anchorage of the components and equipment shall be designed to resist loads in accordance with the California Building Code and ASCE 7, except where the component is positively attached to the structure and flexible connections are provided between the component and associated ductwork, piping, and conduit; and either

1. The component weighs 400 lb (1,780 N) or less and has a center of mass located 4 ft (1.22 m) or less above the supporting structure; or

2. The component weighs 20 lb (89N) or less, or, in the case of a distributed system, 5 lb/ft (73 N/m) or less.

18.41.070 – Amend CRC Section R319.1—Address identification.

Section R319.1 of the California Residential Code is amended to read as follows:

R319.1 Address identification. Buildings and structures shall be provided with an approved address identification and number in accordance with Chapter 18.11 of the Long Beach Municipal Code.

18.41.080 – Amend CRC Section R401.1—Application of foundation.

Section R401.1 of the California Residential Code is amended to read as follows:

R401.1 Application. The provisions of this chapter shall control the design and construction of the foundation and foundation spaces for buildings. In addition to the provisions of this chapter, the design and construction of foundations in flood hazard areas as established by Table R301.2(+) shall meet the provisions of Section R322. Wood foundations shall be designed and installed in accordance with AWC PWF.
Exception: The provisions of this chapter shall be permitted to be used for wood foundations only in the following situations:

1. In buildings that have no more than two floors and a roof.

2. When interior basement and foundation walls are constructed at intervals not exceeding 50 feet (15 240 mm).

Wood foundations in Seismic Design Category D₀, D₁ or D₂ shall not be permitted.

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

18.41.090 – Amend CRC Section R403.1.2—Continuous footing in Seismic Design Categories D₀, D₁ and D₂.

Section R403.1.2 of the California Residential Code is amended to read as follows:

R403.1.2 Continuous footing in Seismic Design Categories D₀, D₁ and D₂. Exterior walls of buildings located in Seismic Design Categories D₀, D₁ and D₂ shall be supported by continuous solid or fully grouted masonry or concrete footings. All required interior braced wall panels in buildings located in Seismic Design Categories D₀, D₁ and D₂ shall be supported on continuous foundations.

18.41.100 – Amend CRC Section R403.1.3.6—Isolated concrete footings.

Section R403.1.3.6 of the California Residential Code is amended to read as follows:

R403.1.3.6 Isolated concrete footings. In detached one- and two-family dwellings located in Seismic Design Category A, B or C that are three stories or less in height and constructed with stud bearing walls, plain concrete footings without longitudinal reinforcement supporting walls and isolated plain concrete footings supporting columns or pedestals are permitted.

18.41.110 – Amend CRC Section R403.1.5—Slope.

Section R403.1.5 of the California Residential Code is amended to read as follows:

R403.1.5 Slope. The top surface of footings shall be level. The bottom surface of footings shall be permitted to have a slope not exceeding one unit vertical in 10 units horizontal (10-percent slope). Footings shall be stepped where it is necessary to change the elevation of the top surface of the footing or where the surface of the ground slopes more than one unit vertical in 10 units horizontal (10-percent slope).

For structures located in Seismic Design Categories D₀, D₁ or D₂, stepped footings shall be reinforced with four 1/2-inch diameter (12.7 mm) deformed reinforcing bars. Two bars shall be place at the top and bottom of the footings as shown in Figure R403.1.5.
18.41.120 – Amend CRC Section R404.2—Wood foundation walls.

Section R404.2 of the California Residential Code is amended to read as follows:

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

18.41.130 – Add CRC Section R503.2.4—Openings in horizontal diaphragms.

Section R503.2.4 is added to Chapter 5 of the California Residential Code to read as follows:

R503.2.4 Openings in horizontal diaphragms. Openings in horizontal diaphragms with a dimension perpendicular to the joist that is greater than 4 feet (1.2 m) shall be constructed in accordance with Figure R503.2.4.
a. Blockings shall be provided beyond headers.
b. Metal ties not less than 0.058 inch [1.47 mm (16 galvanized gage)] by 1.5 inches (38 mm) wide with eight 16d common nails on each side of the header-joist intersection. The metal ties shall have a minimum yield of 33,000 psi (227 MPa).
c. Openings in diaphragms shall be further limited in accordance with Section R301.2.2.65.

FIGURE R503.2.4
OPENINGS IN HORIZONTAL DIAPHRAGMS

18.41.140 – Amend CRC Table R602.3(1)—Fastening schedule.

Footnote k is added to Lines 20, 21, 24, 34, 35, 36, and 3749, 20, 23, 33, 34, 35, and 36 of Table R602.3(1) of the California Residential Code to read as follows:

| TABLE R602.3(1)  
| FASTENING SCHEDULE |
|---------------------|------------------|------------------|------------------|------------------|
| ITEM                | DESCRIPTION OF BUILDING ELEMENTS | NUMBER AND TYPE OF FASTENERa, b, c | SPACING AND LOCATION |
| 2019                | 1” × 6” sheathing to each bearing | 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”) | Face nail |
| 2120                | 1” × 8” and wider sheathing to each bearing | 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”); or 3-8d box (21/2” × 0.113”); or 3-8d common (21/2” × 0.131”) | Face nail |

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.
### Other wall sheathing

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
<th>Nail/Attachment</th>
<th>Face Nails</th>
<th>Support</th>
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</thead>
<tbody>
<tr>
<td>2423</td>
<td>1(^{\times}) 6(^{\ast}) subfloor or less to each joist</td>
<td>3-8d box (2(1/2)(^{\ast}) (\times) 0.113(^{\ast})); or 2-8d common (2(1/2)(^{\ast}) (\times) 0.131(^{\ast})); or 3-10d box (3(^{\ast}) (\times) 0.128(^{\ast})); or 2 staples, 1(^{\ast}) crown, 16 ga., 1(1/4)(^{\ast}) long</td>
<td>Face nail</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**

- a. Nails are smooth common, box or deformed shanks except where otherwise stated. Nails used for framing and sheathing connections shall have minimum average bending yield strengths as shown: 80 ksi for shank diameter of 0.192 inch (20d common nail), 90 ksi for shank diameters larger than 0.142 inch but not larger than 0.177 inch, and 100 ksi for shank diameters of 0.142 inch or less.
- b. Staples are 16 gage wire and have a minimum 7/16-inch on diameter crown width.
- c. Nails shall be spaced at not more than 6 inches on center at all supports where spans are 48 inches or greater.
- d. Four-foot by 8-foot or 4-foot by 9-foot panels shall be applied vertically.
- e. Spacing of fasteners not included in this table shall be based on Table R602.3(2).
- f. For wood structural panel roof sheathing attached to gable and roof framing and to intermediate supports within 48 inches of roof edges and ridges, nails shall be spaced at 6 inches on center where the ultimate design wind speed is less than 130 mph and shall be spaced 4 inches on center where the ultimate design wind speed is 130 mph or greater but less than 140 mph.
- g. Gypsum sheathing shall conform to ASTM C1396 and shall be installed in accordance with GA 252. Fiberboard sheathing shall conform to ASTM C208.
- h. Spacing of fasteners on floor panel edges applies to panel edges supported by framing members and required blocking and at floor perimeters only. Spacing of fasteners to roof sheathing panel edges applies to panel edges supported by framing members and required blocking. Blocking of roof or floor sheathing panel edges perpendicular to the framing members need not be provided except as required by other provisions of this code. Floor perimeter shall be supported by framing members or solid blocking.
- i. Where a rafter is fastened to an adjacent parallel ceiling joist in accordance with this schedule, provide two toe nails on one side of the rafter and toe nails from the ceiling joist to top plate in accordance with this schedule. The toe nail on the opposite side of the rafter shall not be required.
- j. RSRS-01 is a Roof Sheathing Ring Shank nail meeting the specifications in ASTM F1667.
- k. Use of staples in roof, floor, and braced wall panels shall be prohibited in Seismic Design Category D0, D1, or D2.

### 18.41.150 – Amend CRC Section R602.3.2 and Table R602.3.2—Top plate

Exception in Section R602.3.2 and Table R602.3.2 of the California Residential Code are amended to read as follows:

Exception: In other than Seismic Design Category D0, D1 or D2, a single top plate used as an alternative to a double top plate shall comply with the following:

1. The single top plate shall be tied at corners, intersecting walls, and at in-line splices in straight wall lines in accordance with Table R602.3.2.
2. The rafters or joists shall be centered over the studs with a tolerance of not more than 1 inch (25 mm).
3. Omission of the top plate is permitted over headers where the headers are adequately tied to adjacent wall sections in accordance with Table R602.3.2.
18.41.160 – Amend CRC Table R602.3(2)—Alternate attachments to CRC Table R602.3(1).

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

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

18.41.170 – Amend CRC Section R602.10.2.3—Minimum number of braced wall panels.

Section R602.10.2.3 of the California Residential Code is amended to read as follows:

R602.10.2.3 Minimum number of braced wall panels. Braced wall lines with a length of 16 feet (4877 mm) or less shall have not less than a minimum of two braced wall panels of any length or one braced wall panel equal to 48 inches (1219 mm) or more. Braced wall lines greater than 16 feet (4877 mm) shall have not less than a minimum of two braced wall panels. In Seismic Design Category D0, D1, or D2, no braced wall panel shall a contributing length be less than 48 inches in length or as required in Section R602.10.3, whichever is greater, in Seismic Design Category D0, D1, or D2.

18.41.180 – Amend CRC Table R602.10.3(3)—Bracing requirements based on Seismic Design Category.

Table R602.10.3(3) of the California Residential Code is amended to read as follows:

R602.10.3(3) of the California Residential Code is amended to read as follows:

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**TABLE R602.3.2**

SINGLE TOP-PLATE SPLICE CONNECTION DETAILS

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<th>CONDITION</th>
<th>TOP-PLATE SPLICE LOCATION</th>
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<tr>
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<td>Corners and intersecting walls</td>
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<td>Splice plate size</td>
<td>Minimum nails each side of joint</td>
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<td>Structures in SDC A-C</td>
<td>$\frac{3}{8}'' \times \frac{6}{2}'' \times 0.036''$ galvanized steel plate or equivalent</td>
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For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.
## TABLE R602.10.3(3)

**BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY**

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<thead>
<tr>
<th>Seismic Design Category</th>
<th>Story Location</th>
<th>Braced Wall Line Length (feet)</th>
<th>Method L/B</th>
<th>Method GB</th>
<th>Methods DWB, SPB, PBS, FCP, HPS, CS, SFB</th>
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<th>Methods CS-WSP, CS-G, CS-PF</th>
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(continued)
### TABLE R602.10.3(3) BRACING REQUIREMENTS BASED ON SEISMIC DESIGN CATEGORY

<table>
<thead>
<tr>
<th>Seismic Design Category</th>
<th>Story Location</th>
<th>Minimum Total Length (Feet) of Braced Wall Panels Required Along Each Braced Wall Line*</th>
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### Table R602.10.3(3)—continued
**Bracing Requirements Based on Seismic Design Category**

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<th>Seismic Design Category</th>
<th>Story Location</th>
<th>Braced Wall Line Length (feet)</th>
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<th>Method GB</th>
<th>Methods DWB, SFB, PBS, PCP, HPS, CS-5FB²</th>
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<td></td>
<td>20</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>11.0</td>
<td>9.4</td>
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<td></td>
<td>30</td>
<td>NP</td>
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<td>16.5</td>
<td>14.0</td>
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</tr>
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<td></td>
<td>40</td>
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<td>22.0</td>
<td>18.7</td>
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<td></td>
<td>50</td>
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<td>NP</td>
<td>NP</td>
<td>27.5</td>
<td>23.4</td>
<td></td>
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<tr>
<td>Cripple wall below one- or two-story dwelling</td>
<td>10</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>7.5</td>
<td>6.4</td>
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<td>40</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>30.0</td>
<td>25.5</td>
<td></td>
</tr>
<tr>
<td></td>
<td>50</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
<td>37.5</td>
<td>31.9</td>
<td></td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 pound per square foot = 0.0479 kPa.
NP = Not Permitted.
### a. Linear interpolation shall be permitted.

### b. Wall bracing lengths are based on a soil site class “D.” Interpolation of bracing length between the $S_{d0}$ values associated with the seismic design categories shall be permitted when a site-specific $S_{d0}$ value is determined in accordance with Section 1613.2 of the California Building Code.

### c. Where the braced wall line length is greater than 50 feet, braced wall lines shall be permitted to be divided into shorter segments having lengths of 50 feet or less, and the amount of bracing within each segment shall be in accordance with this table.

### d. Method LIB shall have gypsum board fastened to not less than one side with nails or screws in accordance with Table R602.3(1) for exterior sheathing or Table R702.3.5 for interior gypsum board. Spacing of fasteners at panel edges shall not exceed 8 inches.

### e. Methods PFG and CS-SFB do not apply in Seismic Design Categories D0, D1 and D2.

### f. Methods PFH, PFG and ABW are only permitted on a single story or a first of two stories.

### g. Where more than one bracing method is used, mixing methods shall be in accordance with Section R602.10.4.1.

#### Table R602.10.3(3)—continued

<table>
<thead>
<tr>
<th>Seismic Design Category¹</th>
<th>Story Location</th>
<th>Braced Wall Line Length (feet)²</th>
<th>Method¹</th>
<th>Method²</th>
</tr>
</thead>
<tbody>
<tr>
<td>D₀</td>
<td>Three-story dwelling</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
<tr>
<td>D₁</td>
<td>Three-story dwelling</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
<tr>
<td>D₂</td>
<td>Three-story dwelling</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
<tr>
<td></td>
<td>Cripple wall below one- or two-story dwelling</td>
<td>NP</td>
<td>NP</td>
<td>NP</td>
</tr>
</tbody>
</table>

#### Notes:

1. Linear interpolation shall be permitted.
2. Wall bracing lengths are based on a soil site class “D.” Interpolation of bracing length between the $S_{d0}$ values associated with the seismic design categories shall be permitted when a site-specific $S_{d0}$ value is determined in accordance with Section 1613.2 of the California Building Code.
3. Where the braced wall line length is greater than 50 feet, braced wall lines shall be permitted to be divided into shorter segments having lengths of 50 feet or less, and the amount of bracing within each segment shall be in accordance with this table.
4. Method LIB shall have gypsum board fastened to not less than one side with nails or screws in accordance with Table R602.3(1) for exterior sheathing or Table R702.3.5 for interior gypsum board. Spacing of fasteners at panel edges shall not exceed 8 inches.
5. Methods PFG and CS-SFB do not apply in Seismic Design Categories D₀, D₁ and D₂.
6. Methods PFH, PFG and ABW are only permitted on a single story or a first of two stories.
7. Where more than one bracing method is used, mixing methods shall be in accordance with Section R602.10.4.1.
One- and two-family dwellings in Seismic Design Category D2 exceeding two stories shall be designed in accordance with accepted engineering practice.

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

18.41.190 – Amend CRC Table R602.10.4—Bracing methods.

Table R602.10.4 of the California Residential Code is amended to read as follows:
<table>
<thead>
<tr>
<th>METHODS, MATERIAL</th>
<th>MINIMUM THICKNESS</th>
<th>FIGURE</th>
<th>CONNECTION CRITERIA*</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>PFH</strong> Portal frame with hold-downs</td>
<td>7/8&quot;</td>
<td><img src="image" alt="PFH Diagram" /></td>
<td>See Section R602.10.6.2</td>
</tr>
<tr>
<td><strong>PFG</strong> Portal frame at garage</td>
<td>7/16&quot;</td>
<td><img src="image" alt="PFG Diagram" /></td>
<td>See Section R602.10.6.3</td>
</tr>
<tr>
<td><strong>CS-WSP</strong> Continuously sheathed wood structural panel</td>
<td>15/32&quot;</td>
<td><img src="image" alt="CS-WSP Diagram" /></td>
<td>8d common (2 1/2&quot; x 0.131) nailing 3/8&quot; edge distance to panel edge</td>
</tr>
<tr>
<td><strong>CS-G</strong> Continuously sheathed wood structural panel adjacent to garage openings</td>
<td>15/32&quot;</td>
<td><img src="image" alt="CS-G Diagram" /></td>
<td>See Method CS-WSP</td>
</tr>
<tr>
<td><strong>CS-PF</strong> Continuously sheathed portal frame</td>
<td>15/32&quot;</td>
<td><img src="image" alt="CS-PF Diagram" /></td>
<td>See Section R602.10.6.4</td>
</tr>
<tr>
<td><strong>CS-SFB</strong> Continuously sheathed structural fiberboard</td>
<td>1/8&quot; or 25/32&quot; for maximum 16&quot; stud spacing</td>
<td><img src="image" alt="CS-SFB Diagram" /></td>
<td>1 1/2&quot; long x 0.12&quot; dia. (for 1/4&quot; thick sheathing) 1 1/2&quot; long x 0.12&quot; dia. (for 25/32&quot; thick sheathing) galvanized roofing nails</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.0175 rad, 1 pound per square foot = 47.8 N/m², 1 mile per hour = 0.447 m/s.

a. Adhesive attachment of wall sheathing, including Method GB, shall not be permitted in Seismic Design Categories C, D₁, D₂, and D₃.

b. Applies to panels next to garage door opening where supporting gable end wall or roof load only. Shall only be used on one wall of the garage. In Seismic Design Categories D₂, D₁, and D₃, roof covering dead load shall not exceed 3 psf.

c. Garage openings adjacent to a Method CS-G panel shall be provided with a header in accordance with Table R602.5(1). A full-height door opening shall not be permitted adjacent to a Method CS-G panel.

d. Method CS-SFB does not apply in Seismic Design Categories D₂, D₁, and D₃.

e. Method applies to detached one- and two-family dwellings in Seismic Design Categories D₂ through D₃ only.

f. Methods GB and PFG braced wall panel b/w ratio shall not exceed 1.1 in SDC D₂, D₁, or D₃. Methods LTB, D-WB, SSB, FBS, HPS, and PFG are not permitted in SDC D₂, D₁, or D₃.

g. Use of struts in braced wall panels shall be prohibited in SDC D₂, D₁, or D₃.
<table>
<thead>
<tr>
<th>METHODS, MATERIAL</th>
<th>MINIMUM THICKNESS</th>
<th>Connector &amp; Spacing</th>
</tr>
</thead>
<tbody>
<tr>
<td>LIB Let-in-bracing</td>
<td>1 x 4 wood or approved metal straps at 45° to 60° angles for maximum 16&quot; stud spacing</td>
<td>Metal strap: per manufacturer</td>
</tr>
<tr>
<td>DWB Diagonal wood boards</td>
<td>3/4&quot; (1&quot; nominal) for maximum 24&quot; stud spacing</td>
<td>Wood: per stud and top and bottom plates</td>
</tr>
<tr>
<td>WSP Wood structural panel (See Section R604)</td>
<td>See Figure R602.10.6.5.2</td>
<td>8d common (2 1/2&quot; x 0.131&quot;) nails</td>
</tr>
<tr>
<td>BV-WSP Wood structural panels with stone or masonry veneer (See Section R602.10.6.5)</td>
<td>3/8&quot;</td>
<td>See Figure R602.10.6.5.2</td>
</tr>
<tr>
<td>SFB Structural fiberboard sheathing</td>
<td>1/2&quot; or 1 1/8&quot; for maximum 16&quot; stud spacing</td>
<td>Nails or screws per Table R602.3(1) for exterior locations</td>
</tr>
<tr>
<td>GB Gypsum board</td>
<td>1/2&quot;</td>
<td>Nails or screws per Table R602.3(1) for exterior locations</td>
</tr>
<tr>
<td>PBS Particleboard sheathing (See Section R605)</td>
<td>3/8&quot; or 1/2&quot; for maximum 16&quot; stud spacing</td>
<td>For 3/4&quot;, 6d common (2&quot; long x 0.113&quot;) nails; For 1/2&quot;, 8d common (2 1/2&quot; long x 0.131&quot;) nails</td>
</tr>
<tr>
<td>PCP Portland cement plaster</td>
<td>See Section R703.6 for maximum 16&quot; stud spacing</td>
<td>1 1/2&quot; long, 11 gauge, 0.120&quot; dia., 1/16&quot; dia. head nails or 7/16&quot; long, 16 gauge staples</td>
</tr>
<tr>
<td>HPS Hardboard panel siding</td>
<td>7/8&quot; for maximum 16&quot; stud spacing</td>
<td>0.009&quot; dia., 0.225&quot; dia. head nails with length to accommodate 1/2&quot; penetration into studs</td>
</tr>
<tr>
<td>ABW Alternate braced wall</td>
<td>3/8&quot;</td>
<td>See Section R602.10.6.1</td>
</tr>
</tbody>
</table>

(continued)
a. Adhesive attachment of wall sheathing, including Method GB, shall not be permitted in Seismic Design Categories C, D0, D1, and D2.
b. Applies to panels next to garage door opening where supporting gable end wall or roof load only. Shall only be used on one wall of the garage. In Seismic Design Categories D0, D1, and D2, roof covering dead load shall not exceed 3 psf.
c. Garage openings adjacent to a Method CS-G panel shall be provided with a header in accordance with Table R602.7(1). A full-height clear opening shall not be permitted adjacent to a Method CS-G panel.
d. Method CS-SFB does not apply in Seismic Design Categories D0, D1, and D2.
e. Method applies to detached one- and two-family dwellings in Seismic Design Categories D0 through D2 only.
f. Methods GB and PCP braced wall panel h/w ratio shall not exceed 1:1 in SDC D0, D1, and D2. Methods LIB, DWB, SFB, PBS, HPS, and PFG are not permitted in SDC D0, D1, and D2.
g. Use of stapes in braced wall panels shall be prohibited in SDC D0, D1, and D2.

18.41.200 – Amend CRC Table R602.10.5—Minimum length of braced wall panels.

Table R602.10.5 of the California Residential Code is amended to read as follows:

<table>
<thead>
<tr>
<th>TABLE R602.10.5—MINIMUM LENGTH OF BRACED WALL PANELS</th>
</tr>
</thead>
<tbody>
<tr>
<td>METHODS, MATERIAL</td>
</tr>
<tr>
<td>PFH</td>
</tr>
<tr>
<td>PFG</td>
</tr>
<tr>
<td>CS-WSP</td>
</tr>
<tr>
<td>CS-G</td>
</tr>
<tr>
<td>CS-PF</td>
</tr>
<tr>
<td>CS-SFB</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 degree = 0.0175 rad, 1 pound per square foot = 47.8 N/m², 1 mile per hour = 0.447 m/s.
### Minimum Length

<table>
<thead>
<tr>
<th>METHOD</th>
<th>MINIMUM LENGTH&lt;sup&gt;b&lt;/sup&gt; (inches)</th>
<th>CONTRIBUTING LENGTH (inches)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8 feet</td>
<td>9 feet</td>
</tr>
<tr>
<td>DWB, WSP, SFB, PBS, PCP, HPS, BV-WSP</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>GB</td>
<td>48</td>
<td>48</td>
</tr>
<tr>
<td>LIB</td>
<td>55</td>
<td>62</td>
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<tr>
<td>ABW</td>
<td></td>
<td></td>
</tr>
<tr>
<td>SDC A, B and C, ultimate design wind speed &lt; 140 mph</td>
<td>28</td>
<td>32</td>
</tr>
<tr>
<td>SDC D&lt;sub&gt;o&lt;/sub&gt;, D&lt;sub&gt;l&lt;/sub&gt; and D&lt;sub&gt;c&lt;/sub&gt;, ultimate design wind speed &lt; 140 mph</td>
<td>32</td>
<td>32</td>
</tr>
<tr>
<td>CS-G</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>CS-WSP, CS-SFB</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Adjacent clear opening height (inches)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>≤ 64</td>
<td>24</td>
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<td>68</td>
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<td>—</td>
</tr>
<tr>
<td>144</td>
<td>—</td>
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</tr>
</tbody>
</table>

### Portal Header Height

<table>
<thead>
<tr>
<th>METHOD</th>
<th>Portal header height</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>8 feet</td>
<td>9 feet</td>
</tr>
<tr>
<td>PFH Supporting roof only</td>
<td>16.24</td>
<td>16.24</td>
</tr>
<tr>
<td>Supporting one story and roof</td>
<td>24</td>
<td>24</td>
</tr>
<tr>
<td>PFG</td>
<td>24</td>
<td>27</td>
</tr>
<tr>
<td>CS-PF SDC A, B and C</td>
<td>16</td>
<td>18</td>
</tr>
<tr>
<td>SDC D&lt;sub&gt;o&lt;/sub&gt;, D&lt;sub&gt;l&lt;/sub&gt; and D&lt;sub&gt;c&lt;/sub&gt;</td>
<td>16.24</td>
<td>18.24</td>
</tr>
</tbody>
</table>

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm, 1 mile per hour = 0.447 m/s.
NP = Not Permitted.

a. Linear interpolation shall be permitted.
b. Use the actual length where it is greater than or equal to the minimum length.
c. Maximum header height for PFH is 10 feet in accordance with Figure R602.10.6.2, but wall height shall be permitted to be increased to 12 feet with pony wall.
d. Maximum header height for PFG is 10 feet in accordance with Figure R602.10.6.3, but wall height shall be permitted to be...
increased to 12 feet with pony wall.
e. Maximum header height for CS-PF is 10 feet in accordance with Figure R602.10.6.4, but wall height shall be permitted to be increased to 12 feet with pony wall.

18.41.210 – Amend CRC Figure R602.10.6.1—Method ABW: Alternate braced wall panel.

Figure R602.10.6.1 of the California Residential Code is amended to read as follows:

**FIGURE R602.10.6.1**

**METHOD ABW—ALTERNATE BRACED WALL PANEL**

For SI: 1 inch = 25.4 mm.

18.41.220 – Amend CRC Figure R602.10.6.2—Method PFH: Portal frame with hold-downs at detached garage door openings.

Figure R602.10.6.2 of the California Residential Code is amended to read as follows:
18.41.230 – Amend CRC Figure R602.10.6.4—Method CS-PF: Continuously sheathed portal frame panel construction.

Figure R602.10.6.4 of the California Residential Code is amended to read as follows:
18.41.240 – Amend CRC Section R606.4.4–Parapet walls.

Section R606.4.4 of the California Residential Code is amended to read as follows:

R606.4.4 Parapet walls. Unreinforced solid masonry parapet walls shall not be less than 8 inches (203 mm) thick and their height shall not exceed four times their thickness. Unreinforced hollow unit masonry parapet walls shall be not less than 8 inches (203 mm) thick, and their height shall not exceed three times their thickness. Masonry parapet walls in areas subject to wind loads of 30 pounds per square foot (1.44 kPa) or located in Seismic Design Category D0, D1 or D2, or on townhouses in Seismic Design Category C shall be reinforced in accordance with Section R606.12.

18.41.250 – Amend CRC Section R606.12.2.2.3—Reinforcement requirements for masonry elements.

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

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

1. Horizontal reinforcement. Horizontal joint reinforcement shall consist of not less than one No. 4 bar spaced not more than 48 inches (1219 mm). Horizontal reinforcement shall be provided within 16 inches (406 mm) of the top and bottom of these masonry elements.

2. Vertical reinforcement. Vertical reinforcement shall consist of not less than one No. 4 bar spaced not more than 48 inches (1219 mm). Vertical reinforcement shall be within 8 inches (203 mm) of the ends of masonry walls.
18.41.260 – Add CRC Section R803.2.4—Openings in horizontal diaphragms.

Section R803.2.4 is added to Chapter 8 of the California Residential Code to read as follows:

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

18.41.270 – Amend CRC Section R1001.3.1—Vertical reinforcing.

Section R1001.3.1 of the California Residential Code is amended to read as follows:

R1001.3.1 Vertical reinforcing. For chimneys up to 40 inches (1016 mm) wide, four No. 4 continuous vertical bars adequately anchored into the concrete foundation shall be placed between wythes of solid masonry or within the cells of hollow unit masonry and grouted in accordance with Section R606. Grout shall be prevented from bonding with the flue liner so that the flue liner is free to move with thermal expansion. For chimneys more than 40 inches (1016 mm) wide, two additional No. 4 vertical bars adequately anchored into the concrete foundation shall be provided for each additional flue incorporated into the chimney or for each additional 40 inches (1016 mm) in width or fraction thereof.

CHAPTER 18.42
ELECTRICAL CODE

18.42.010 – Adoption of California Electrical Code.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2022 Edition of the California Electrical Code (herein referred to as the “California Electrical Code”). The California Electrical Code is Part 3 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is based on the provisions of the 2020 Edition of the National Electrical Code (herein referred to as the “National Electrical Code”) as developed by the National Fire Protection Association with necessary California amendments. The following annexes of the California Electrical Code are included: Annexes A, B and C. The following articles, chapters or annexes of the California Electrical Code are deleted: Annexes D, E, F, G, H, I and J.

The adoption of the California Electrical Code is subject to the changes, amendments and modifications to said code as provided 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. Such codes and code provisions shall constitute and be known as the Long Beach Electrical Code. A copy of the California Electrical Code, printed as code in book form, shall be on file in the Office of the City Clerk.

CHAPTER 18.43
PLUMBING CODE

18.43.010 – Adoption of California Plumbing Code.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2022 Edition of the California Plumbing Code (herein referred to as “California Plumbing Code”). The California Plumbing Code is Part 5 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is based on the provisions of the 2021 Edition of the Uniform Plumbing Code as developed by the International Association of Plumbing and Mechanical Officials with necessary California amendments. The following appendices of the California Plumbing Code are included: Appendices A, B, D, H, and I. The following sections, chapters, or appendices of the California Plumbing Code are deleted: Sections 101.0 through 107.2 and Table 104.5 of Chapter 1, Division II; Chapters 13, 15 and 16; and Appendices C, E, F, G, J, K, L, and M.
The adoption of the California Plumbing Code is subject to the changes, amendments and modifications to said code as provided 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. Such codes and code provisions shall constitute and be known as the Long Beach Plumbing Code. A copy of the California Plumbing Code, printed as code in book form, shall be on file in the Office of the City Clerk.

CHAPTER 18.44
MECHANICAL CODE

18.44.010 – Adoption of California Mechanical Code.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2022 Edition of the California Mechanical Code (herein referred to as the “California Mechanical Code”). The California Mechanical Code is Part 4 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is developed by the International Association of Plumbing and Mechanical Officials with necessary California amendments. The following appendices of the California Mechanical Code are included: Appendices A, B, C, and D. The following sections, chapters or appendices of the California Mechanical Code are deleted: Sections 101.0 through 107.2 and Table 104.5 of Chapter 1, Division II; and Appendices E, F and G.

The adoption of the California Mechanical Code is subject to the changes, amendments and modifications to said code as provided 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. Such codes and code provisions shall constitute and be known as the Long Beach Mechanical Code. A copy of the California Mechanical Code, printed as code in book form, shall be on file in the Office of the City Clerk.

CHAPTER 18.46
ENERGY CODE

18.46.010 – Adoption of California Energy Code.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2022 Edition of the California Energy Code (herein referred to as the “California Energy Code”). The California Energy Code is Part 6 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is developed by the California Energy Commission.

The adoption of the California Energy Code and certain provisions of the Long Beach Municipal Code shall remain in full force and effect as provided in this title. Such codes and code provisions shall constitute and be known as the Long Beach Energy Code. A copy of the California Energy Code, printed as code in book form, shall be on file in the Office of the City Clerk.

CHAPTER 18.47
GREEN BUILDING STANDARDS CODE

18.47.010 – Adoption.

The adoption of the California Green Building Standards Code is subject to the changes, amendments and modifications to said code as provided 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. Such codes and code provisions shall constitute and be known as the Long Beach Green Building Standards Code. A copy of the California Green Building Standards Code, printed as code in book form, shall be on file in the Office of the City Clerk.

CHAPTER 18.48
FIRE CODE

18.48.010 – Adoption of the California Fire Code.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2022 Edition of the California Fire Code (CFC). The following chapters or sections of the California Fire Code are also included; Chapter 1 Division II Parts 1 and 2, Sections 305, 307, 308, 309, 311.2.1, 311.3, 403.12, 503 and 510.3. The following chapters or sections of the California Fire Code are deleted; 105.6.305, 305.1, 308.1.4, 308.1.7, 903.4 exceptions 4 and 5, 907.3.1 exceptions 1 and 913.4 methods 3 and 4. The California Fire Code is Part 9 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is based on the provisions of the 2021 International Fire Code (model code) as developed by the International Code Council with necessary California amendments.

The adoption of the 2022 Edition of the California Fire Code (herein referred to as the “California Fire Code”) is subject to the changes, amendments and modifications to said code as provided 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. Such codes and code provisions shall constitute and be known as the Long Beach Fire Code. A copy of the California Fire Code, printed as code in book form, shall be on file in the Office of the City Clerk.

18.48.120 – CFC Chapter 1, Section 105.65—Required operational permits.

Section 105.6.5 of Chapter 1 of the California Fire Code is amended to read as follows:

105.6.5 Required operational permits. The Fire Code Official is authorized to issue operational permits for the operations set forth in Chapter 1, Sections 105.6.15 through 105.6.67.

18.48.130 – CFC Chapter 1, Section 105.65—Required operational permits.

Section 105.6.5 of Chapter 1 of the California Fire Code is amended by the addition of Sections 105.6.52 through 105.6.57 to read as follows:

105.6.52 Airport, heliport and helistop. An operational permit is required to operate an airport, heliport and helistop.

105.6.53 Battery systems. An operational permit is required to operate battery storage systems exceeding the threshold quantities found in Table 4206.2107.1.1 of this code.

105.6.54 Bulk storage facility. Above ground bulk storage of flammable and combustible liquids for each 225,000 BBL or major fraction thereof.
105.6.55 Educational occupancy. An operational permit is required to operate any occupancy classified as E-Daycare in all commercial properties and residential properties with more than seven (7) children.

105.6.56 Emergency responder radio coverage system. An operational permit is required to operate an emergency responder radio coverage system.

105.6.57 General use permit. An operational permit is required to maintain, store, use or handle materials, or to conduct processes which may produce conditions hazardous to life or property, or to install equipment used in connection with such processes, or to carry on any activity which in the opinion of the Fire Code Official may be hazardous to life and property and which is not specifically covered by Section 105.65.

105.6.58 High-rise. An operational permit is required to operate any high-rise structure.

105.6.59 Hot air balloon. An operational permit is required to launch any hot air balloon which has its lifting power provided by an open flame device. A plan shall be submitted for approval showing distances from buildings and other possible hazards, as determined by the Fire Code Official, before the permit is issued.

105.6.60 Institutional occupancy. An operational permit is required to operate any occupancy classified as an I-2, I-2.1, I-3 or I-4 occupancy.

105.6.61 Marijuana facility. An operational permit is required to operate a dispensary, cultivation, manufacturing, distribution or similar facility.

105.6.62 Marine service station. An operational permit is required to operate a marine service station.

105.6.63 Public firework display. An operational permit is required to conduct a public firework display.

105.6.64 Radioactive material. An operational permit is required to store or handle radioactive materials.

105.6.65 Recreational fire. An operational permit is required for a recreational fire.

105.6.66 Residential occupancy. An operational permit is required to operate a residential occupancy with three or more units.

105.6.67 Rifle range. An operational permit is required to operate a rifle range.

18.48.140 – CFC Chapter 1, Section 105.6.165.18—Flammable and combustible liquids.

Section 105.6.165.18 of Chapter 1 of the California Fire Code is amended by the revision of Subsection (3) to read as follows:

3. To store, handle or use Class II or Class IIIA liquids in excess of 25 gallons (95L) in a building or in excess of 60 gallons (227L) outside a building.

18.48.150 – CFC Chapter 1, Section 105.76—Required construction and inspection permits.

Section 105.7.6 of Chapter 1 of the California Fire Code is amended to read as follows:

105.7.6 Required construction and inspection permits. The Fire Code Official is authorized to issue construction and inspection permits for work as set forth in Chapter 1, Sections 105.76.1 through 105.7.346.30.
18.48.160 – CFC Chapter 1, Section 105.76—Required construction and inspection permits.

Section 105.7–6 of Chapter 1 of the California Fire Code is amended by the addition of Sections 105.7.266.25 through 105.7.316.30 to read as follows:

105.7.266.25 Buildings and structures. An inspection permit is required to construct, enlarge, alter, repair, move, demolish, or change the occupancy of a building or structure.

105.7.276.26 Automatic sprinkler systems. A construction permit is required for the installation or modification of an automatic sprinkler system, including all interior and exterior piping, valves, or appurtenances. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

105.7.286.27 Fire Department emergency access and building emergency egress. A construction permit is required for the construction or modification of a Fire Department emergency access and building emergency egress.

105.7.296.28 High piled storage. A construction permit is required for the construction or modification of a high piled storage area inside, or outside of any building or structure.

105.7.306.29 Hazardous materials, when not in “H” occupancies. A construction permit is required for the installation or modification of a hazardous material, when not in “H” occupancies.

105.7.316.30 Special systems. A construction permit is required for the construction or modification of vapor recovery systems, dust collection systems, compressed or liquefied gas manifolds, and other special systems requiring Fire Department approvals.

18.48.170 – CFC Chapter 1, Section 406.107—Fees.

Section 406.107 of Chapter 1 of the California Fire Code is amended by the addition of Sections 406.6107.7, 406.7107.8 and 406.8107.9 to read as follows:

406.6107.7 Operational permit fees. The fee set forth and established for the particular activity by a resolution of the City Council shall accompany all operational permits required pursuant to the provisions of this code.

406.7107.8 Construction and inspection permit fees. Construction and inspection permit fees shall be paid at the time of the permit issuance. In addition to the permit fee, the applicant shall pay a plan check fee. The fee set forth and established for the particular activity by a resolution of the City Council shall accompany all construction and inspection permits required pursuant to the provisions of this code.

406.8107.9 Reinspection fee. When the Fire Code Official or his representative arrives at an occupancy to inspect for compliance with a written order or notice and is prevented from making the inspection due to inaccessibility of the area, or finds that compliance with the written order has not been made or other circumstances, or when an inspection is scheduled for operational or construction permits and the permittee is not ready for inspection and does not inform the Fire Code Official or his representative two hours prior to the scheduled inspection, a reinspection fee may be assessed.

18.48.180 – CFC Chapter 1, Section 408.2109.2—Testing and operation.

Section 408.2109.2 of Chapter 1 of the California Fire Code is amended by the addition of Section 108.2.2 to read as follows:

408.2109.2 Submission of records. Contractors, engineers, test companies and licensed and/or certified testers who perform inspection, testing and/or maintenance services on fire protection and life safety systems and equipment within the City of Long Beach are required to electronically submit all
compliant and non-compliant reports to the Long Beach Fire Department via a method approved by the Fire Code Official.

18.48.190 – CFC Chapter 1, Section 408.6109.6—Overcrowding.

Section 408.6109.6 of Chapter 1 of the California Fire Code is amended by the addition of Section 408.6109.6.1 to read as follows:

408.6109.6.1 Occupant count. The supervisor of each place of assembly shall have an effective system to keep count of the number of occupants present in the assembly area. If at any time, the Fire Code Official determines that an accurate count of occupants is not being maintained, the occupancy shall be cleared until an accurate count can be made.

18.48.200 – CFC Chapter 1, Section 440.4112.4—Violation penalties.

Section 440.4112.4 of Chapter 1 of the California Fire Code is amended to read as follows:

440.4112.4 Violation penalties. Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the Fire Code Official, or of a permit or certificate used under the provisions of this code, or who enters a building that has been declared “unsafe” and ordered “evacuated”, shall be guilty of a misdemeanor.

A person is guilty of a separate offense each day during which he or she commits, continues, or permits a violation of any provision of, or any order, rule, or regulation made pursuant to, this chapter.

18.48.210 – CFC Chapter 1, Section 442.4113.4—Failure to comply.

Section 442.4113.4 of Chapter 1 of the California Fire Code is amended to read as follows:

442.4113.4 Failure to comply. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be guilty of a misdemeanor.

A person is guilty of a separate offense each day during which he or she commits, continues, or permits a violation of any provision of, or any order, rule, or regulation made pursuant to, this chapter.

18.48.220 – CFC Chapter 1—Administration.

Chapter 1 Division II of the California Fire Code is amended by the addition of Section 444.115 to read as follows:

SECTION 444.115 – RESPONSIBILITY

444.115.1 Responsibility for costs. Persons who personally or through another willfully, negligently, or in violation of law set a fire, allow a fire to be set, allow a fire kindled or attended by them to escape from their control, allow any hazardous materials to escape from their control, neglect to properly comply with any written notice of the Fire Code Official, or willfully or negligently allow the continuation of a violation of this code and amendments thereto are liable for the expenses of fighting the fire, for the expenses of any investigation, or for the expenses incurred during a hazardous materials incident. Such expenses shall be a charge against that person. Such charge shall constitute a debt of such person, and is collectible by the City in the same manner as in the case of an obligation under a contract, expressed or implied and a lien may be attached to the involved property.

444.2115.2 Reporting injuries caused by fires. Any person, firm, corporation, or agency that maintains a hospital, pharmacy, or any other medical or first aid service shall immediately report to the Fire Code Official any person suffering from any fire-related injury. The report shall be made both by telephone.
and in writing, and shall include the name and address of the injured person, the person’s whereabouts, and the character and extent of the person’s injuries.

18.48.230 – CFC Chapter 2, Section 202—General definitions.

Section 202 of Chapter 2 of the California Fire Code is amended by adding or revising the following definitions to read as follows:

Boat Yard. A facility for construction, repair, storage, launching, berthing, and fueling of small craft.

"High-rise structure". Every building of any type of construction or occupancy having floors used for human occupancy located more than seventy-five (75) feet above the lowest floor level having building access (see California Building Code, Section 403) or the lowest level of Fire Department vehicle access, whichever is more restrictive, except buildings used as hospitals as defined in Section 1250 of the California Health and Safety Code.

Fire Chief. The chief officer of the Fire Department serving the jurisdiction.

Fire Code Official. The fire marshal or his or her designated representatives.

Small Craft. Vessels under sixty-five (65) feet in length.

18.48.280 – CFC Chapter 4, Section 403.4211—Special requirements for public safety.

Sections 403.42-311.3 through 403.42-311.3.3 of Chapter 4 of the California Fire Code is deleted in its entirety and replaced with Section 403.42-311.3 to read as follows:

403.42-311.3 Fire safety officer. When in the opinion of the Fire Code Official, a place of assembly or any other place where people congregate, because of the number of persons, or nature of performance, exhibition, display, contest or activity or any other type of activity, and when the Fire Code Official determines it is essential for public safety, the owner, agent, lessee or responsible party shall pay for Long Beach Fire Department Fire Safety Officers to be present.

18.48.320 – CFC Chapter 5, Section 505.1—Address numbers identification.

Section 505.1 of Chapter 5 of the California Fire Code is amended by the addition of the following sentence to read as follows:

When in the opinion of the Fire Code Official address numbers need to be larger due to building location each character shall be 8 inches in height or larger as required by the Fire Code Official.
18.48.330 – CFC Chapter 5, Section 505.1—Address numbers identification.

Section 505.1 of Chapter 5 of the California Fire Code is amended by the addition of Sections 505.1.1 and 505.1.2 to read as follows:

505.1.1 Rear address numbers. All buildings on the property of the Long Beach Airport, and all multi-tenant buildings within the City, shall be provided with address numbers and/or suite numbers on the rear doors to each tenant space.

505.1.2 Address illumination. Address numbers on the street or road frontage of the building, shall be internally or externally illuminated. In addition, buildings on the Long Beach Airport property shall have the rear address numbers internally or externally illuminated, in addition to the street or road frontage addresses.

18.48.380 – CFC Chapter 5, Section 510.5.35.4—Acceptance test procedures.

Section 510.5.35.4 of Chapter 5 of the California Fire Code is amended by the addition of Section 510.5.3.15.4.1 to read as follows:

510.5.3.15.4.1 Acceptance testing. When required by the Fire Code Official, an approved independent test company shall be obtained by the installing contractor to witness and record all acceptance testing. All test results shall be sent to the Fire Code Official.

18.48.400 – CFC Chapter 9, Section 901.4.2—Nonrequired fire protection and life safety systems.

Section 901.4.2 of Chapter 9 of the California Fire Code is amended to read as follows:

901.4.2 Nonrequired fire protection and life safety systems. Any fire protection and life safety system not required by this code or the California Building Code shall be furnished for complete protection throughout the entire building and meet all requirements of this code and the California Building Code unless a fire wall, with no door or window opening, is constructed per the California Building Code Section 706 to separate the building or fire areas.

18.48.410 – CFC Chapter 9, Section 901.4—Installation of fire protection and life safety systems.

Section 901.4 of Chapter 9 of the California Fire Code is amended by the addition of Section 901.4.74.8 to read as follows:

901.4.74.8 Protection of fire protection systems and equipment. Fire protection systems and equipment subject to possible vehicular damage shall be adequately protected with guard posts in accordance with Section 312 Vehicle Impact Protection, and modifications adopted under this code.

18.48.490 – CFC Chapter 9, Section 903.4.2—Sprinkler system supervision and alarms.

Section 903.4.2 of Chapter 9 of the California Fire Code is amended by the addition of Sections 903.4.2.1 and 903.4.2.2 to read as follows:

903.4.2.1 Alarms. At least one (1) additional horn and strobe device is required on the interior of a building at the main entrance or in a location as approved by the Fire Code Official.
903.4.2.2 Manual pull station. At least one (1) manual pull station is required on the interior of a building at the main entrance or in a location as approved by the Fire Code Official.

18.48.570 – CFC Chapter 9, Section 910.3—Smoke and heat vents.

| Section 910.3 of Chapter 9 of the California Fire Code is amended to read as follows: |

| 910.3 Smoke and heat vents. The design and installation of smoke and heat vents shall be in accordance with Sections 910.3.1 through 910.3.43.6. |

18.48.580 – CFC Chapter 9, Section 910.3—Smoke and heat vents.

| Section 910.3 of Chapter 9 of the California Fire Code is amended by the addition of Section 910.3.43.6 to read as follows: |

| 910.3.43.6 Sprinklered buildings. Smoke and heat vents fusible links shall be designed at a minimum of 100 degrees above the temperature rating of the fire sprinklers. |

18.48.710 – CFC Chapter 56, Section 5601.2.4—Financial responsibility.

| Section 5601.2.4 of Chapter 56 of the California Fire Code is amended to read as follows: |

| 5601.2.4 Financial responsibility. Before a permit required by Chapter 1, Sections 105.6.445.16, 105.6.405.42 or 105.6.635.66 is issued, the permittee shall file with the Fire Code Official a certificate of insurance issued by an insurance company authorized to transact business in the State of California. Such certificate shall certify that the operations under the permit are covered by the policy. The insurance coverage shall not be less than One Million Dollars for injury or death of one person, One Million Dollars for injury or death to more than one person and One Million Dollars for damage to property in any one occurrence. Should the Fire Code Official decide that the activities of the permittee should be supervised by employees of the Fire Department, then the permittee shall furnish to the Fire Code Official the original or certified copy of the policy of insurance in the amounts above provided. The City of Long Beach, its officers, agents, employees and volunteers shall be named parties insured under said policy insofar as the activities of such officers and employees pertain to operations of permittee under the permit. The policy of insurance shall be approved by Risk Management as to sufficiency and the City Attorney as to form. Upon approval, the policy of insurance will be returned if permittee files a certificate of insurance issued by the insurance carrier. No insurance will be required if the permittee is a public agency. |

CHAPTER 18.49
EXISTING BUILDING CODE

18.49.010 – Adoption of California Existing Building Code.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2022 Edition of the California Existing Building Code (herein referred to as “California Existing Building Code”). The California Existing Building Code is Part 10 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is based on the provisions of the 2021 Edition of the International Existing Building Code (herein referred to as the “International Existing Building Code”) as developed by the International Code Council with necessary
California amendments. The following appendix of the California Existing Building Code is included: Appendix A. The following sections, chapters or appendices of the California Existing Building Code are deleted: Sections 101 through 117 of Chapter 1, Division II; Chapters 6 through 143; Appendices B through DC; and Resource A.

The adoption of the California Existing Building Code is subject to the changes, amendments and modifications to said code as provided 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. Such codes and code provisions shall constitute and be known as the Long Beach Existing Building Code. A copy of the California Existing Building Code, printed as code in book form, shall be on file in the Office of the City Clerk.

18.49.020 – Amend CEBC Section 201.4—Terms not defined.

Section 201.4 of the California Existing 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.

18.49.030 – Amend CEBC Section 506.1—Change of occupancy—Compliance.

Section 506.1 of the California Existing Building Code is amended to read as follows:

506.1 Compliance. No change shall be made in the use or occupancy of any building unless such building is made to comply with the requirements of the California Building Code for the use or occupancy. Changes in use or occupancy in a building or portion thereof shall be such that the existing building is not less complying with the provisions of this code than the existing building or structure was prior to the change. Subject to the approval of the Building Official, the use or occupancy of existing buildings shall be permitted to be changed and the building is allowed to be occupied for purposes in other groups without conforming to all of the requirements of this code for those groups, provided the new or proposed use is less hazardous, based on life and fire risk, than the existing use. For the purpose of this section, the order of least hazardous group to highest hazardous group is as follows:

- Group U (least hazardous group)
- Groups R-3 and R-3.1
- Group S-2
- Groups B, C, F, L, M, H and S-1
- Groups R-1, R-2, R-2.1 and R-4
- Groups A, E and I (highest hazardous group)

Exception: The building or structure need not be made to comply with Chapter 16 of the California Building Code unless required by Section 506.54.

18.49.040 – Amend CEBC Section 506.1.1—Change in the character of use.

Section 506.1.1 of the California Existing Building Code is amended to read as follows:

506.1.1 Change in the character of use. A change in occupancy with no change of occupancy classification or an increase in occupant load within the same occupancy classification shall not be made to any building or structure that will subject the building or structure to any special provisions of the applicable California codes, without approval of the Building Official. Compliance shall be only as necessary to meet the specific provisions and is not intended to require the entire building be brought into compliance.
18.49.050 – Amend CEBC Section 506.54.3—Seismic loads.

Section 506.54.3 of the California Existing Building Code is amended to read as follows:

506.54.3 Seismic loads (seismic force-resisting system). When a change of occupancy results in a building or structure being assigned to a higher risk category, the change is from a Group S or Group U occupancy to any other than Group S or Group U, or Groups A, E or I occupancies in a building or structure constructed prior to January 9, 1934 and is within the scope of Chapter 18.68 of the Long Beach Municipal Code, the building or structure shall satisfy the requirement of Section 1613 of the California Building Code for the new risk category using full seismic forces.

Exceptions:

1. Where the area of the new occupancy is less than 10 percent of the building area, compliance with this section is not required. The cumulative effect of occupancy changes over time shall be considered.

2. When a change of use results in a building or structure being reclassified from Risk Category I or II to Risk Category III and the seismic coefficient, $S_D$, is less than 0.33, compliance with this section is not required.

3. Unreinforced masonry bearing wall buildings assigned to Risk Category III and to Seismic Design Category A or B, shall be permitted to use Appendix Chapter A1 of this code or Chapter 18.68 of the Long Beach Municipal Code.

4. Where the change is from Group S or Group U occupancy and there is no change of risk category, use of reduced seismic forces shall be permitted.

18.49.060 – Amend CEBC Section 1401.2—Conformance.

Section 1401.2 of the California Existing Building Code is amended to read as follows:

1401.2 Conformance. The building or structure shall be safe for human occupancy as determined by the California Fire Code and Chapter 18.45 of the Long Beach Municipal Code. Any repair, alteration or change of occupancy undertaken within the moved building or structure shall comply with the requirement of this code applicable to the work being performed. Buildings or structures moved into or within the City shall comply with the provisions of this code and Chapter 18.60 of the Long Beach Municipal Code for new buildings or structures, whichever is more restrictive. Any field-fabricated elements shall comply with the requirements of the California Building Code or the California Residential Code as applicable. [HCD 1 & HCD 2] After July 1, 1978, local ordinances or regulations for moved apartment houses and dwellings shall permit the retention of existing materials and methods of construction, provided the apartment house or dwelling complies with the building standards for foundations applicable to new construction and does not become or continue to be a substandard building. For additional information, see Health and Safety Code Section 17958.9.

CHAPTER 18.50
HISTORICAL BUILDING CODE

18.50.010 – Adoption of California Historical Building Code.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2022 Edition of the California Historical Building Code (herein referred to as the “California Historical Building Code”). The California Historical Building Code is Part 8 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is developed by the State Historical Building Safety Board.
The adoption of the California Historical Building Code is subject to the changes, amendments and modifications to said code as provided 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. Such codes and code provisions shall constitute and be known as the Long Beach Historical Building Code. A copy of the California Historical Building Code, printed as code in book form, shall be on file in the Office of the City Clerk.

18.50.020 – Amend CHBC Section 8-201—Definitions.

Section 8-201 of the California Historical Building Code is amended the first paragraph to read as follows:

For the purpose of the CHBC, certain terms and phrases, words and their derivatives shall be construed as specified in the chapter. Additional definitions and/or terms may appear in the various other chapters relative to terms or phrases primarily applicable thereto. Any reference to “authority having jurisdiction” does not necessarily preclude the appellate process of Section 8-104.3.

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.

18.50.030 – Amend CHBC Section 8-706.1.2—Evaluation and seismic improvement of URM buildings.

Section 8-706.1.2 of the California Historical Building Code is amended to read as follows:

8-706.1.2 Evaluation and seismic improvements of unreinforced masonry bearing wall buildings shall comply with Chapter 18.68 of the Long Beach Municipal Code, or the California Existing Building Code (CEBC), Appendix A1 2022 Edition if approved by the Building Official, and as modified by the CHBC.

Exceptions:

1. Alternative standards may be used on a case-by-case basis when approved by the Building Official. It shall be permitted to exceed the strength limitation of 100 psi in Chapter 18.68 of the Long Beach Municipal Code or Section A108.2 of the CEBC when test data and building configuration supports higher values, subject to the approval of the Building Official.

2. CEBC Section A102.2 shall not apply to Qualified Historical Buildings in Risk Category III buildings and other structures whose primary occupancies are public assembly with an occupancy load greater than 300.

18.50.040 – Amend CHBC Section 8-805.1—Existing solid masonry.

Section 8-805.1 of the California Historical Building Code is amended by replacing the reference to the “2010 Edition of the CEBC” to the “2022 Edition of the CEBC”.

18.50.050 – Amend CHBC Section 8-805.2.1—Solid backed stone masonry.

Section 8-805.2.1 of the California Historical Building Code is amended by replacing the reference to the “2009 IEBC” to the “2022 Edition of the CEBC”.

18.50.060 – Amend CHBC Section 8-805.2.3—Testing of stone masonry.

Section 8-805.2.3 of the California Historical Building Code is amended by replacing the reference to the “2010 CEBC” to the “2022 Edition of the CEBC”.

Draft Version: 03/21/2022
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.

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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 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 7-1605.

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18.69.040 – Strengthening requirements.

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B. Foundations.

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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 2304.12.1.4 of the California Building Code adopted in Chapter 18.40. 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.
The installation of nuts on all anchors shall be subject to verification by the Building Official. Torque testing shall be performed for twenty percent (20%) of all adhesive or expansion anchors.

Minimum test values shall be thirty (30) foot-pounds for one-half inch (1/2”) and forty (40) foot-pounds for five-eighths inch (5/8”) 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 inches (32”) 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 three-sixteenths inch (3/16”) to three-fourths inch (3/4”) wider than the sill plate. The shim length shall extend a minimum of two inches (2”) 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 three-fourths inch (3/4”).

All anchor side plates which use lag or wood screws shall pre-drill the sill plate to prevent splitting as required by Section 12.1 of the 2018 ANSI/AWC NDS2304.9 of the California Building Code adopted in Chapter 18.40.

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 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.

3. New perimeter foundations. Sill plates for new perimeter foundations shall be anchored as required by Section 2308.3.14805.6 of the California Building Code adopted in Chapter 18.40.

18.69.050 – Quality control.

C. Structural observation. Structural observation is not required for work done under the prescriptive provisions of this chapter. When construction documents for strengthening are prepared by a registered design professional and alternate materials or methods are used, structural observation shall be provided as required in Section 1704.64740 of the California Building Code adopted in Chapter 18.40.

D. Registered design professional of record's statement. When an alternative design is provided per Subsection 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..."
CHAPTER 18.70
VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING WOOD FRAME RESIDENTIAL BUILDINGS WITH SOFT, WEAK OR OPEN FRONT WALLS

18.70.050 – Analysis and design.

... 

C. Design base shear. The design base shear shall be seventy-five percent (75%) of that currently required by ASCE 7-1605 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 7-1605 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.

... 

G. PΔ effects. The requirements of ASCE 7-1605 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 \( \Omega \) per Subsection 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.

... 

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 subsection.

... 

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 construction documents that includes the correct shear wall capacity in pounds per foot; the required fastener type, length, gauge and head size; and a complete specification for the sheathing material and its thickness. The schedule shall also show the required location of three-inch (3”) nominal or two (2) two-inch (2”) 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 Municipal 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 adopted in Chapter 18.40 of the Long Beach Municipal Code."

CHAPTER 18.71
VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING REINFORCED CONCRETE BUILDINGS AND CONCRETE FRAME BUILDINGS WITH MASONRY INFILLS

18.71.030 – Definitions.

For purposes of this chapter, the applicable definitions and notations in Sections 1602, 1613.2 and 4902 of the California Building Code adopted in Chapter 18.40 and the following definition shall apply:

"Masonry infill" means the unreinforced or reinforced masonry wall construction within a reinforced concrete frame.
18.71.050 – Criteria selection.

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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.

   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 7-1605 Section 12.3-2.

   b. Structures having one or more of the features listed in Table 12.3-2 of ASCE 7-1605 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 7-1605. The story drift for this determination shall be calculated including torsional effects.

   c. Structures having one (1) or more of the features listed in Table 12.3-1 of ASCE 7-1605 shall be designated as having a plan irregularity.

...  

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 7-1605, 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 7-1605 and may be one of the following:

1. The elastic design response spectrum shall be seventy-five percent (75%) of the response spectrum described in ASCE 7-1605 Section 11.4.85.

2. A site-specific response spectrum shall be seventy-five percent (75%) of the site-specific response spectrum described in ASCE 7-1605 Section 11.4.87.

...
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:

...  

3. Partially grouted masonry. A minimum of five (5) units shall be removed from the walls and tested in conformance with ASTM C90-1403 Specification for Load Bearing Concrete Masonry Units. Compressive strength of the masonry may be determined in accordance with Chapter 21 of the California Building Code adopted in Chapter 18.40, assuming Type S mortar. The strain associated with peak stress may be taken as 0.0025.

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 (2) orthogonal axes shall be combined as required by Subsection 18.71.060.A.

B. Base Shear for Analysis. The base shear used to determine story drifts shall be determined using seventy-five percent (75%) of the base shear as determined in accordance with ASCE 7-1605 Section 12.8.1.

Where:

\[ R = 1.4 \text{ for concrete frame buildings with masonry infill and all other reinforced concrete buildings.} \]

**EXCEPTION:** \[ R = 1.0 \text{ for single-story buildings. The } R \text{ value in ASCE 7-1605 Table 12.2-1 for new building design shall not be used for story drift determination.} \]

C. Structure period. The value of \( T \) may be determined by either Method A or B as prescribed by ASCE 7-1605 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.

18.71.120 – Materials of construction.

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 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 adopted in Chapter 18.40."

...
CHAPTER 18.72
VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING REINFORCED CONCRETE AND REINFORCED MASONRY WALL BUILDINGS WITH FLEXIBLE DIAPHRAGMS

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 adopted in Chapter 18.40; Sections 1.2, 3.1.1, 4.1, 5.2, 6.2 and 11.2 of ASCE 7-1605, and the following shall apply.

18.72.040 – Analysis and design.

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 (1/3) stress increase permitted by Section 1605.24.2 of the California Building Code adopted in Chapter 18.40 shall not be permitted for materials using allowable stress design methods.

The strength design specified in Section 1605.24.2 of the California Building Code adopted in Chapter 18.40, using a load factor of 1.432.0 in lieu of 1.04 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 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 7-1605.

EXCEPTION: If continuously tied girders are present, then the maximum spacing of the continuity ties is the greater of the girder spacing or twenty-four (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 7-1605 shall be in addition to the diaphragm sheathing.
Lengths of development of anchor loads in wood diaphragms shall be based on existing field nailing of the sheathing unless existing edge nailing is positively identified on the original construction plans or at the site.

At reentrant corners, continuity collectors may be required for existing return walls not designed as shear walls, to develop into the diaphragm a force equal to the lesser of the rocking or shear capacity of the return wall, or the tributary shear but not exceeding the capacity of the diaphragm. Shear anchors for the return wall shall be commensurate with the collector force. If a truss or beam other than rafters or purlins is supported by the return wall or by a column integral with the return wall, an independent secondary column is required to support the roof or floor members whenever rocking or shear capacity of the return wall is governing.

18.72.060 – Information required on construction documents.

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 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 adopted in Chapter 18.40."

CHAPTER 18.75
GRADING, EXCAVATIONS AND FILLS

18.75.050 – Fills.

A. General. Unless otherwise recommended in the geotechnical report, fills shall comply with the provisions of this section.

B. Surface preparation. The ground surface shall be prepared to receive fill by removing vegetation, topsoil and other unsuitable materials, and scarifying the ground to provide a bond with the fill material.

C. Benching. Where existing grade is at a slope steeper than five (5) units horizontal to one (1) unit vertical (20% twenty-percent slope) and the depth of the fill exceeds five feet (5') benching shall be provided in accordance with Figure 18.75.050. A key shall be provided which is at least ten feet (10') in width and two feet (2') in depth.

18.75.090 – Referenced standards.

ASTM D1557-12E1 Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort [56,000 ft-lb/ft³ (2,700kN-m/m³)].
CHAPTER 18.99
FINDINGS

18.99.010 – Purpose.

A. The provisions of this title contain certain changes, deletions, modifications and additions to the 2022 Edition of the California Building Standards Code adopted by the City. Chapters and sections of this title, including the amendments herein, are considered amendments to the California Building Standards Code and Appendices. Some of these changes are administrative in nature in that they do not constitute changes, modifications or additions to the California Building Standards Code.