

EXHIBIT B TO RESOLUTION NO. 2019 -

**FINDINGS AND DETERMINATION THAT CHANGES
OR MODIFICATIONS TO THE 2019 CALIFORNIA BUILDING CODE, ARE
REASONABLY NECESSARY BECAUSE OF LOCAL CONDITIONS**

1. In connection with the adoption by reference of the International Building Code, 2018 Edition, as amended by the State of California in that document entitled “The California Building Standards Code,” it is hereby expressly found and determined that the following changes are reasonably necessary because of local climatic, geological or topographical conditions:

Section 7-5-140 Table R602.10.3(3) (Bracing Requirements Based on Seismic Design Category) of CRC Chapter 6 (Wall Construction) is amended as follows:

Add a new “g” footnote notation to the end of CRC Table R602.10.3 (3). To read:

- f. In Seismic Design Categories D₀, D₁, and D₂, Method GB is not permitted and the use of Method PCP is limited to one-story single family dwellings and accessory structures.

Add the “g” footnote notation in the title of Table R602.10.3(3) to read:

Section R602.10.4.5 is added to Section R602.10.4 (Construction methods for braced wall panels) of CRC Chapter 6 (Wall Construction), to read:

R602.10.4.5, to read:

R602.10.4.5 Limits on methods GB and PCP. In Seismic Design Categories D₀, D₁, and D₂, Method GB is not permitted for use as intermittent braced wall panels, but gypsum board is permitted to be installed when required by this Section to be placed on the opposite side of the studs from other types of braced wall panel sheathing. In Seismic Design Categories D₀, D₁, and D₂, the use of Method PCP is limited to one-story single family dwellings and accessory structures.

Section 7-5-145: MULTIPLE HAZARDS: OUTDOOR STORAGE.

(a) When a hazardous material has multiple hazards, all hazards shall be addressed and controlled in accordance with the provisions of this chapter. When overhead noncombustible construction is provided for sheltering exterior hazardous material storage areas, such storage shall not be considered indoor storage when all of the following conditions are met:

- (1) Supports shall be of noncombustible construction.
- (2) Supports and walls shall not obstruct more than 25 percent of the perimeter of the storage area.
- (3) The distance to buildings, property lines, streets, alleys, public ways or exits to a public way shall not be less than the distance required for an exterior hazardous material storage area without weather protection.

Section 7-5-155: Noncombustible construction Section 414.6.1.3 of the Code is added to read

as follows:

414.6.1.3 Noncombustible construction. The overhead structure shall be of approved noncombustible construction with a maximum area of 3,000 square feet (140m²).

Section 7-5-160: Modifications to 2019 CBC and ASCE 7 is added to read as follows:

Section 1612.3 of the 2019 California Building Code is amended to read as follows.

1612.3 Establishment of flood hazard areas. To establish flood hazard areas, the governing body shall adopt a flood hazard map and supporting data. The flood hazard map shall include, at a minimum, areas of special flood hazard as identified by the Federal Emergency Management Agency in an engineering report entitled “The Flood Insurance Study for City of Leandro, California, revision dated December 21, 2018, as amended, 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.

Section 1613.6 is added to read as follows:

1613.3 ASCE 7, 12.2.3.1, Exception 3. Modify ASCE 7 Section 12.2.3.1 Exception 3 to read as follows:

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

Section 7-5-165: CONCRETE CONSTRUCTION

Section 1705.3 of the California Building Code, 2019 Edition is amended as follows:

1705.3 Concrete Construction. Special inspections and tests of concrete construction shall be performed by this section and Table **1705.3**.

Exceptions: Special inspection shall not be required for: *[OSHPD 1R, 2 & 5] Exceptions 1 through 4 are not permitted by OSHPD.*

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

3. Nonstructural concrete slabs supported directly on the ground, including pre-stressed slabs on grade, where the effective pre-stress in the concrete is less than 150 psi (1.03 Mpa).
4. Concrete foundation walls constructed in accordance with Table 1807.1.6.2.
5. Concrete patios, driveways and sidewalks, on grade.

Section 7-5-170: STRUCTURAL OBSERVATIONS FOR SEISMIC RESISTANCE

Section 1704.6.1 of the 2019 Edition of the California Building Code is amended by adding new item 5 and exception to read as follows:

5. Structural observations of the lateral system shall be provided for all new commercial, industrial, and multifamily buildings and all new single family dwelling on hillsides.

Exception: Structural observations of the lateral system may be waived for one and two-story wood residential structure when such structures are in full compliance with conventional light frame construction of Chapter 23 of the California Building Code or the California Residential Code.

SECTION 7-5-175: SOILS AND FOUNDATIONS

Sections 1803.8, 1803.9 and 1803.10 are added to the 2019 California Building Code to read:

1803.8 Review. Before issuing a permit for a building where soil and foundation investigation is required, the Geotechnical Engineer or Civil Engineer in responsible charge of the soil investigation shall state in writing (must be signed and stamped):

1. The plans and specifications substantially conform to the recommendations in the soil investigation.
2. The Geotechnical Engineer or Civil Engineer in responsible charge of the soil investigation has been retained to provide soil site observation and provide periodic and final reports to the city.

1803.9 Field Report. Before requesting a foundation inspection from the City, the Geotechnical Engineer or Civil Engineer in responsible charge of the soil investigation shall provide a written field report stating:

1. The building pad was prepared and compacted in accordance with the soil report and specification.
2. The foundation or pier excavation, depth, backfill materials, and drainage (if applicable), substantially conforms with the soil report and approved plans.

1803.10 Final Report. Before final inspection for any building or structure, the Geotechnical Engineer or Civil Engineer in responsible charge of the soil investigation shall issue a final report stating the completed pad, foundation, finish grading, drainage, and associated site work substantially conforms to the approved plans, specifications, and investigation.

SECTION 7-5-180: CONCRETE AND MASONRY FOUNDATION WALLS

Section 1807.1.6 of the 2019 Edition of the California Building Code is amended to read as follows:

1807.1.6 Prescriptive design of concrete and masonry foundation walls [OSHPD 1R, 2 & 5] Not permitted by OSHPD. Concrete and masonry foundation walls that are laterally supported at the top and bottom shall be permitted to be designed and constructed in accordance with this section. Prescriptive design of foundation walls shall not be used for structures assigned to Seismic Design Category D, E or F.

SECTION 7-5-185: MODIFICATIONS TO ACI 318

Section 1905.1 is amended to read as shown below and Sections 1905.1.9 thru 1905.1.11 is added to Chapter 19 of the 2019 Edition of the California Building Code:

The last paragraph of Section 1905.1.2 of the 2019 Edition of the California Building Code is amended to read as follows:

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

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

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

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

- (c) Plain concrete footing 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.

Sections 1905.1.9 through 1905.1.11 are added as follows:

1905.1.9 ACI 318, Section 18.7.5. Modify ACI 318, Section 18.7.5, by adding Section 18.7.5.8 and 18.7.5.9 as follows:

18.7.5.8 Where the calculated point of contra flexure is not within the middle half of the member clear height, provide transverse reinforcement as specified in ACI 318 Sections 18.7.5.1, Items (a) through (c), over the full height of the member.

18.7.5.9 At any section where the design strength, ϕP_n , of the column is less than the sum of the shears V_e computed in accordance with ACI 318 Sections 18.6.5.1 and 18.7.6.1.1 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, ϕP_n , of the column, these moments are permitted to be assumed to result from the deformation of the frame in any one principal axis.

1905.1.10 ACI 318, Section 18.10.4. Modify ACI 318, Section 18.10.4, by adding Section 18.10.4.6 to read as follows:

18.10.4.6 – Walls and portions of walls with $P_u > 0.35P_o$ shall not be considered to contribute to the calculated shear strength of the structure for resisting earthquake-induced forces. Such walls shall conform to the requirements of ACI 318 Section 18.14.

1905.1.11 ACI 318, Section 18.12.6. Modify ACI 318, 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 $6 d_b$ in thickness, where d_b is the diameter of the largest reinforcement in the topping slab.

Section 7-5-190: CONVENTIONAL LIGHT-FRAME CONSTRUCTION

Section 4.3.4 of SDPWS 2018 Edition is amended as follows:

Delete rows 5 & 6 of Table 4.3.4

Section 2306.3 of the California Building Code, 2019 is amended as follows:

Section 2306.3 Wood –frame shear walls. Wood –frame shear walls 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 2306.3(1), 2306.3(2) or 2306.3(3) shall be permitted. 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. Shear walls sheathed with Portland cement plaster, gypsum lath, gypsum sheathing or gypsum board shall not be used to resist seismic forces in structures assigned to Seismic design Category D, E or F.

Section 2308.6.8.1 of the California Building Code, 2019 Edition is amended as follows:

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

Exceptions:

1. One-story buildings with maximum plan dimension not exceeding 50 feet (15240 mm), may have continuous foundations located at exterior braced wall lines only.
2. Two-story buildings with a maximum plan dimension not exceeding 50 feet (15240 mm) may have braced wall lines supported on continuous foundations at the exterior walls only, provided:
 - a. Cripple walls do not exceed 4 feet (1219 mm) in height.
 - b. Where the first story is supported on a raised wood framed floor, the interior braced wall panels are directly supported by either doubled joists, continuous 4x blocking or minimum 4x floor beams.

Section 7-5-195: **REPAIRS.** 2019 Title 24, California Existing Building Code, Part 10, Section 404 is amended as follows

Sections 405.2.4 through 405.2.4.2 and Tables 405.2.4.1 and 405.2.4.2 are added as follows:

405.2.4 Seismic Evaluation and Design Procedures for Repairs. The seismic evaluation and design shall be based on the procedures specified in the California Building Code, ASCE 31 *Seismic Evaluation of Existing Buildings* (for evaluation only) or ASCE 41 *Seismic Rehabilitation of Existing Buildings*. The procedures contained in Appendix A of the *International Existing Building Code* shall be permitted to be used as specified in Section 3405.5.1.1.3.

404.2.4.1 Compliance with CBC level seismic forces. Where compliance with the seismic design provisions of the California Building Code is required, the procedures shall be in accordance with one of the following:

1. One-hundred percent of the values in the California Building Code. Where the existing seismic force-resisting system is a type that can be designated as “Ordinary,” the values of R , Ω_o , and C_d used for analysis in accordance with Chapter 16 of the California Building Code shall be those specified for structural systems classified as “Ordinary” in accordance with Table 12.2-1 of ASCE 7, unless it is demonstrated that the structural system will provide performance equivalent to that of a “Detailed,” “Intermediate” or “Special” system.
2. Compliance with ASCE 41 using both BSE-1 and BSE-2 earthquake hazard levels and the corresponding performance levels in Table 404.2.4.1.

**TABLE 405.2.4.1
PERFORMANCE CRITERIA FOR CBC LEVEL SEISMIC FORCES**

| OCCUPANCY CATEGORY (BASED ON TABLE 1604.5) CBC | PERFORMANCE LEVEL FOR USE WITH ASCE 41 BSE-1 EARTHQUAKE HAZARD LEVEL | PERFORMANCE LEVEL FOR USE WITH ASCE 41 BSE-2 EARTHQUAKE HAZARD LEVEL |
|------------------------------------------------|----------------------------------------------------------------------|----------------------------------------------------------------------|
| I | Life Safety (LS) | Collapse Prevention (CP) |
| II | Life Safety (LS) | Collapse Prevention (CP) |
| III | Note a | Note a |
| IV | Immediate Occupancy (IO) | Life Safety (LS) |

a. Acceptance criteria for Occupancy Category III shall be taken as 80 percent of the acceptance criteria specified for Occupancy Category II performance levels, but need not be less than the acceptance criteria specified for Occupancy Category IV performance levels.

405.2.4.2 Compliance with reduced CBC level seismic forces. Where seismic evaluation and design is permitted to meet reduced California Building Code seismic force levels, the procedures used shall be in accordance with one of the following:

1. The California Building Code using 75 percent of the prescribed forces. Values of R , Ω_o , and C_d used for analysis shall be as specified in Section 3405.2.4.1 Item 1.
2. Structures or portions of structures that comply with the requirements of the applicable chapter in Appendix A of the *International Existing Building Code* as specified in Items 2.1 through 2.5 below shall be deemed to comply with this section.
 - 2.1. The seismic evaluation and design of unreinforced masonry bearing wall buildings in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A1.
 - 2.2. Seismic evaluation and design of the wall anchorage system in reinforced concrete and reinforced masonry wall buildings with flexible diaphragms in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A2.
 - 2.3. Seismic evaluation and design of cripple walls and sill plate anchorage in residential buildings of light-frame wood construction in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A3.
 - 2.4. Seismic evaluation and design of soft, weak, or open-front wall conditions in multiunit residential buildings of wood construction in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A4.
 - 2.5. Seismic evaluation and design of concrete buildings in all Occupancy Categories are permitted to be based on the procedures specified in Appendix Chapter A5.
3. Compliance with ASCE 31 based on the applicable performance level as shown in Table 404.2.4.2. It shall be permitted to use the BSE-1 earthquake hazard level as defined in ASCE 41 and subject to the limitations in item 4 below.
4. Compliance with ASCE 41 using the BSE-1 Earthquake Hazard Level defined in ASCE 41 and the performance level as shown in Table 404.2.4.2. The design spectral response acceleration parameters S_{xs} and S_{x1} specified in ASCE 41 shall not be taken less than 75 percent of the respective design spectral response acceleration parameters S_{DS} and S_{D1} defined by the *California Building Code* and its reference standards.

**TABLE 405.2.4.2
PERFORMANCE CRITERIA FOR REDUCED CBC
LEVEL SEISMIC FORCES**

| OCCUPANCY CATEGORY (BASED ON CBC TABLE 1604.5) | PERFORMANCE LEVEL FOR USE WITH ASCE 31 | PERFORMANCE LEVEL FOR USE WITH ASCE 41 BSE-1 EARTHQUAKE HAZARD LEVEL |
|-------------------------------------------------------------------|-----------------------------------------------------------|-----------------------------------------------------------------------------------------|
| I | Life Safety (LS) | Life Safety (LS) |
| II | Life Safety (LS) | Life Safety (LS) |
| III | Note a, Note b | Note a |
| IV | Immediate Occupancy (IO) | Immediate Occupancy (IO) |

- a. Acceptance criteria for Occupancy Category III shall be taken as 80 percent of the acceptance criteria specified for Occupancy Category II performance levels, but need not be less than the acceptance criteria specified for Occupancy Category IV performance levels.
- b. For Occupancy Category III, the ASCE screening phase checklists shall be based on the life safety performance level.

404.3.1 Referenced Standards

| <u>Standard Reference Number</u> | <u>Referenced In Code Title</u> | <u>Section Number</u> |
|------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------------|
| ASCE 31-03 | Seismic Evaluation of Existing Buildings | 405.2.4.1, TABLE 405.2.4.1 405.2.4.2, TABLE 405.2.4.2 |
| ASCE 41-06 | Seismic Rehabilitation of Existing Buildings Including Supplement No. 1 | 405.2.4.1, TABLE 405.2.4.1 405.2.4.2, TABLE 405.2.4.2 |

Section 7-5-200: CHANGE OF OCCUPANCY: SEISMIC.

Section 407 is amended as follows.

Section 407.1 Conformance. 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 no 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.

Section 407.1.1 Change in the character of use. A change in occupancy with no change of occupancy classification shall not be made to any structure that will subject the 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.

2. The aforesaid local amendment is reasonably necessary in order to lessen the threat to life, safety and property represented by certain local climatic, geographical and topographical conditions existing in the City of San Leandro.
3. The aforesaid local amendment is enacted pursuant to the authority of Section 17958.5 of the California Health and Safety Code, for the purpose of addressing the aforesaid conditions which are more specifically described as follows:
 - (a) The City of San Leandro lies in the near vicinity of the Hayward Fault and in fact, a substantial portion of the residential area of the City lies within the Alquist - Priolo Act Special Studies Zone, requiring special geologic studies prior to development. The underlying soils are subject to liquefaction and amplification of seismic energy. This increases the likelihood of seismic disturbances of substantial magnitude occurring and causing consequent damage. Such damage is often accompanied by structural fire. The City contains a large percentage of existing structures constructed more than forty years ago, which will sustain significant damage as a result of an event.
 - (b) The travel time to a fire or other emergency within San Leandro may be impeded by the following conditions:
 - (1) Three major railway lines, the elevated BART line, three major freeways and a natural creek, divide the City into numerous sections, and equipment responding to emergencies face potential delays and obstruction of access in crossing these barriers.
 - (2) San Leandro lies in the path of two major water reservoirs which, upon failure, would inundate a large portion of the City, further delaying the response to a fire or other emergency.
 - (3) A growing community of single-family and multi-family dwellings presently exists on the easterly side of Highway 580, which is itself a potential physical barrier impeding response to a fire or other emergency.
 - (4) The two major north-south emergency response routes aside from the freeways are dependent upon bridges spanning San Leandro Creek. Failure of these bridges would isolate a heavily populated section of the City north of the creek.
 - (5) Severe seismic events could disrupt communications, damage gas mains, cause extensive electrical hazards, and place extreme demands on the limited and widely dispersed resources of the Fire and Police Departments responding to fire and life safety needs of the community.

4. In the event of a natural disaster inadequately reinforced and/or anchored structures present a significantly greater threat to persons and property due to the increased likelihood that such structures or portions of such structures may collapse in the wake of the natural disaster. To allow previous structurally deficient structures to be reconstructed to such condition perpetuates the threat to persons and property upon the occurrence of a subsequent natural disaster.

5. The City Council hereby takes official notice of the General Plan (and all elements thereof) of the City of San Leandro, all documents on file with the City relating to the Alquist - Priolo Act Special Studies Zone and seismic reinforcement, and the findings and recommendations of the Board of Appeals in this matter.