RESOLUTION NO. RES-07-0153

A RESOLUTION OF THE CITY COUNCIL OF THE CITY OF LONG BEACH ADOPTING AND MAKING EXPRESS FINDINGS AND DETERMINATIONS RELATING TO THE ENACTMENT OF ADMINISTRATIVE AMENDMENTS, AND, WHERE APPROPRIATE, MORE RESTRICTIVE BUILDING CODE PROVISIONS THAN THOSE OF THE CALIFORNIA BUILDING CODE; FINDING THAT SAID AMENDMENTS AND MODIFICATIONS TO THE CODE ARE REASONABLY NECESSARY BECAUSE OF THE LOCAL CLIMATIC, GEOLOGICAL OR TOPOGRAPHICAL CONDITIONS EXISTING IN LONG BEACH; AND INSTRUCTING THE DIRECTOR OF PLANNING AND BUILDING TO TRANSMIT SAID FINDINGS AND DETERMINATIONS TO THE CALIFORNIA BUILDING STANDARDS COMMISSIONS IN ACCORDANCE WITH CALIFORNIA HEALTH AND SAFETY CODE SECTION 17958.7

WHEREAS, California Health and Safety Code Section 17922 requires all cities to adopt, as the City Building Standards Code, the State Building Standards Code adopted pursuant to the provisions of Chapter 4 of Part 2.5 of Division 13 of the California Health and Safety Code; and

WHEREAS, Section 17958.5 of the California Health and Safety Code provides, in pertinent part, as follows:

"... a city or county may make such changes or modifications in the requirements contained in the provisions published in the California

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Building Code and the other regulations adopted pursuant to Section 17922 as it determines, pursuant to the provisions of Section 17958.7, are reasonably necessary because of local climatic, geological or topographical conditions;" and

WHEREAS, prior to making the modifications permitted under Section 17958.5 of the California Health and Safety Code, this Council is required to make an express finding that such modifications or changes are reasonably necessary because of local climatic, geological or topographical conditions; and

WHEREAS, the City of Long Beach is traversed by the Newport Inglewood Fault System, is near the San Andreas Fault, and is surrounded by other earthquake faults; and

WHEREAS, the City is located by the International Building Code in Seismic Design Category D, E or F, which is considered by experts to be one of the most active seismic regions in the world; and

WHEREAS, the Northridge Earthquake that occurred on January 17, 1994, was only a moderate Richter Magnitude 6.8 earthquake, yet caused damage in the Los Angeles Basin area to more than 115,000 buildings and the vacation of 21,000 residential units including 2,000 homes; and

WHEREAS, there were 57 persons who lost their lives in this earthquake, but there could have been several thousand more casualties, if the earthquake had occurred at midday during the workweek when most buildings would be occupied instead of at 4:31 a.m. on a holiday; and

WHEREAS, seismic experts report a significantly high probability for a larger earthquake occurring in the greater Los Angeles Basin area within the next 30 years; and

WHEREAS, unusually large earthquakes cause extraordinary stresses on buildings and structures which require more stringent building regulations than would otherwise be required; and

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WHEREAS, the Northridge Earthquake provided valuable insight into the vulnerabilities of some building systems, designs and materials to the unanticipated level of damage; and

WHEREAS, the Department of Planning and Building, in cooperation with other major jurisdictions within the region, are continuing efforts to protect the community from the hazards of future earthquakes through the Los Angeles Regional Uniform Code Program (LARUCP) which creates uniformity of building regulations adopted by the cities and county of the Los Angeles region; and

WHEREAS, the California Building Code has not yet fully addressed the lessons learned from the Northridge Earthquake.

NOW, THEREFORE, in order to provide adequate protection under the unique local geologic conditions set forth above, the City of Long Beach makes the following findings and determinations relative to the adoption of administrative amendments, and where appropriate, the adoption of more restrictive Building Code provisions than those of the California Building Code:

Section 1.

Section 18.24.010 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes.

Section 18.24.020 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes.

Section 18.24.030 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reflect the state agencies and the applicable referenced sections.

Section 18.24.040 – Administrative amendment which adopts the latest edition of the California Building Code and the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region and makes minor editorial changes. Certain chapter, appendices, and/or sections deleted are non-mandatory provisions.

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Section 18.24.050 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to the title and provision of this section, previously known as Section 18.24.730. Chapter 18.56 "Signs" will no longer remain in effect with the adoption of Appendix H of the CBC that contains provisions for sign regulation. Existing administrative language in Chapter 18.56 will be moved into Section 18.12.010. Chapter 18.72 "Gas Appliances" will no longer be in effect as many of these provisions are incorporated in the Plumbing Code. New voluntary earthquake hazard reduction standards are proposed.

Section 18.24.060 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to include a reference to a dictionary to be used for words not defined in the code. Unlike the UBC, the IBC does not have such reference any longer.

Section 18.24.070 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes. This administrative amendment was previously Section 18.24.080.

Section 18.24.071 – Amendment due to local geological conditions. The inclusion of the language "lowest level of Fire Department vehicle access" is a more accurate reflection of Fire Department capability to address fire-safety issue in high-rise building. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake, and requires these extra margins of safety due to the necessity of providing on site fire protection in an emergency during seismic event when fire department resources could be greatly delayed and overwhelmed.

Section 18.24.072 – Amendment due to local geological conditions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake, and

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requires these extra margins of safety due to the necessity of providing on site fire protection in an emergency during seismic event when fire department resources could be greatly delayed and overwhelmed.

Section 18.24.073 – Amendment due to local geological conditions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake, and requires these extra margins of safety due to the necessity of providing on site fire protection in an emergency during seismic event when fire department resources could be greatly delayed and overwhelmed.

Section 18.24.074 – Amendment due to local geological conditions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake, and requires these extra margins of safety due to the necessity of providing on site fire protection in an emergency during seismic event when fire department resources could be greatly delayed and overwhelmed.

Section 18.24.075 – Amendment due to local geological conditions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake, and requires these extra margins of safety due to the necessity of providing on site fire protection in an emergency during seismic event when fire department resources could be greatly delayed and overwhelmed.

Section 18.24.076 – Amendment due to local geological conditions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constru/cted over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake, and

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requires these extra margins of safety due to the necessity of providing on site fire protection in an emergency during seismic event when fire department resources could be greatly delayed and overwhelmed.

Section 18.24.077 – Amendment due to local geological conditions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake, and requires these extra margins of safety due to the necessity of providing on site fire protection in an emergency during seismic event when fire department resources could be greatly delayed and overwhelmed.

Section 18.24.078 – Amendment due to local geological conditions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake, and requires these extra margins of safety due to the necessity of providing on site fire protection in an emergency during seismic event when fire department resources could be greatly delayed and overwhelmed.

Section 18.24.080 – Amendment due to local geological conditions. Additional reinforcement for heavy veneer, stone and masonry veneer was needed after the 1994 Northridge Earthquake. There were numerous observations of veneer pulling away from wood stud framing following the Northridge Earthquake. Most of it was due to corrosion and weakness in the anchor ties and mesh connections to the framing. Where sheathing was beneath the veneer, nail attachments were often not attached to the wall framing below. Northridge SEAOSC/LA City Post Northridge Earthquake committee findings indicated significant loss of veneer from buildings due to inadequate design and construction. The Los Angeles/Long Beach region is a densely populated area that has buildings constructed over and near a vast and complex network of faults that are believed to be capable of producing future earthquakes similar or greater in size than the

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1994 Northridge and the 1971 Sylmar earthquakes. Design provisions developed based on a detailed study of the 1994 Northridge Earthquake need to be incorporated into the local building codes to assure new buildings, and additions to existing buildings, are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.085 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reflect the appropriate reference to the Municipal Code for submission of construction documents.

Section 18.24.090 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reference the appropriate flood hazard information.

Section 18.24.095 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reflect the appropriate reference to the Municipal Code for inspections.

Section 18.24.100 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. This local amendment carries forward the previous 1999 and 2002 LARUCP structural amendment adopted by the cities and county of the Los Angeles region to limit the maximum span of cantilevered diaphragms supporting lateral-force-resisting elements from above, thereby addressing the problem of poor performance of diaphragms transmitting seismic loads to lateral-force-resisting elements below. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to limit the maximum span of

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cantilevered diaphragms that supports lateral-force-resisting elements from above need to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.110 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The California Building Code has no information regarding the design requirements for ceiling suspension systems for seismic loads. It is through the experience of prior earthquakes, such as the 1994 Northridge Earthquake, that this amendment is proposed so as to minimize the amount of bodily and building damage within the spaces in which this type of ceiling will be installed. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification requiring design requirements for ceiling suspension systems to resist seismic loads need to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.120 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The proposed modifications need to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code. Observed damages to one and two family dwellings of light frame construction after the Northridge Earthquake may have been partially attributed to vertical irregularities common to this type of occupancy and construction. In an effort to improve quality of construction and

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incorporate lessons learned from studies after the Northridge Earthquake, the proposed modification to ASCE 7-05 Section 12.2.3.1 by limiting the number of stories and height of the structure to two stories will significantly minimize the impact of vertical irregularities and concentration of inelastic behavior from mixed structural systems. This local amendment carries forward the previous 1999 and 2002 LARUCP amendment to limit the maximum span of cantilevered diaphragms supporting lateral-force-resisting elements from above, thereby addressing the problem of poor performance of diaphragms transmitting seismic loads to lateral-force-resisting elements below. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. Results from the 75% Draft of ATC-63, Quantification of Building System Performance and Response Parameters, indicate that tall buildings may fail at an unacceptably too low of a seismic level unless the minimum base shear level is increased to the value used in ASCE 7-02. Thus it is recommended that the adoption of the minimum base shear is appropriate due to the recent research in PEER and the ATC 63 project. The conclusion suggested that the reduction of the base shear in the previous Code led to a trend in which tall buildings had decreasing safety with increasing height. To minimize the potential increased fire-life safety associated with such a seismic failure of tall buildings, this proposed modification increases the minimum base shear level to be consistent with previous editions of the building codes. The proposed amendment to the current ASCE 7 is very well supported by the engineering community. Both SEAOSC and other structural engineer organizations from the state level are in support of adopting the revised minimum base shear. The Buckling Restrained Steel Frame (BRBF) system was first approved for the 2003 NEHRP Provisions. The values for the approximate period perimeters Ct and x were also approved as part of that original BSSC Proposal 6-6R (2003). It seems to be a simple oversight that these parameters were not carried forward into the 2005 edition of ASCE 7-05. Currently, these two factors can be found in Appendix R of AISC 341-05.

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There, they function only as a placeholder that will be removed in the next version upon approval by ASCE 7 Task Committee on Seismic. The SEAOSC Steel Committee supports the proposed modification. Importance Factor, I, seems to have been dropped from equation 12.8-16 by mistake while transcribing it from NEHRP Recommended Provisions (2003) equation 5.2-16. For buildings with importance factor, I, higher than 1.0, stability coefficient should include the importance factor. The proposed modification is recommended and adopted by OSPHD and DSA-SS as reflected in Section 1614A1.8 to Chapter 16 of the 2007 California Building Code. Furthermore, the SEAOSC Steel Committee supports the proposed modification. A joint Structural Engineers Association of Southern California (SEAOSC), Los Angeles County and Los Angeles City Task Force investigated the performance of concrete and masonry construction with flexible wood diaphragm failures after the Northridge earthquake. It was concluded at that time that continuous ties are needed at specified spacing to control cross grain tension in the interior of the diaphragm. Additionally, subdiaphragm shears need to be limited to control combined orthogonal stresses within the diaphragm. Recognizing the importance and need to continue the recommendation made by the task force, but also taking into consideration the improved performance and standards for diaphragm construction today, a proposal to increase the continuous tie spacing limit to 40 ft in lieu of 25 ft and to use 75% of the allowable code diaphragm shear to determine the depth of the sub-diaphragm in lieu of the 300 plf is deemed appropriate and acceptable. These requirements are variations of Items 4 and 7 of Section 1633.2.9 from the previous 1999 and 2002 LARUCP structural provision that amended the California Building Code. The Los Angeles/Long Beach region is within a very active geological location. The various jurisdictions within this region have taken additional steps to prevent roof or floor diaphragms from pulling away from concrete or masonry walls. This decision was made due to the frequency of this type of failure during the past significant earthquakes. This section was a portion of the previous Code and has been adjusted to accommodate higher diaphragm shear allowable as noted above. Section 12.12.3 of ASCE 7-05

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including Supplement No. 1 does not provide requirements for separation distances between adjacent buildings. Requirements for separation distances between adjacent buildings, not structurally connected, were included in previous editions of the IBC and UBC. However, when ASCE 7-05 was adopted by reference for IBC 2006, these requirements were omitted. In addition, ASCE 7-05 defines (□x) in Section 12.8.6 to refer to the deflection of Level x at the center of mass. The actual displacement that needs to be used for building separation is the displacement at critical locations with consideration of both the translational and torsional displacements. These values can be significantly different. This Code change fills the gap of this inadvertent oversight in establishing minimum separation distance between adjoining buildings that are not structurally connected. The purpose of seismic separation is to permit adjoining buildings, or parts thereof, to respond to earthquake ground motion independently and thus preclude possible structural and non-structural damage caused by pounding between buildings or other structures. This local amendment carries forward the previous 1999 and 2002 LARUCP 16-5 amendment adopted by the cities and county of the Los Angeles region regulating return walls and fins/canopies at entrances to ensure the seismic compatibility of the diaphragm. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. The study concluded that stiffness incompatibility between entrance canopies need to be addressed. This decision was made due to the frequency of this type of failure during the past significant earthquakes.

Section 18.24.130 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reflect the appropriate reference to the Municipal Code for inspection regulation.

Section 18.24.140 – Amendment due to local geological and topographic conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles

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region. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. One of the significant problems discovered from the studies after the Northridge Earthquake was the extent of poor quality in construction, especially for residential wood frame buildings and/or accessories structures. Requiring that special inspectors be provided for work listed under Section 1704 to observe the actual construction will ensure that acceptable standards of workmanship are provided. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code. Minor editorial changes to reflect the appropriate section reference from "Section 109, Appendix Chapter 1" to "Chapter 18.16 Inspection".

Section 18.24.145 – Administrative amendment to reflect change to the appropriate reference to the Long Beach Municipal Code for the proper statues regulating the submission of construction documents within the Long Beach jurisdiction.

Section 18.24.150 – Amendment due to local geological and topographic conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Results from studies after the Northridge Earthquake indicated that a lot of the damages were attributed to lack of quality control during construction resulting in poor performance of the building or structure. The proposed modification to improve quality control during construction needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

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Section 18.24.160 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The grade beams in the pile or caisson supported foundation system are designed to act like concrete beams and not like footings. Section 1704.4 requires concrete beams to have special inspection, but exempts the footings of buildings three stories or less in height. This amendment clarifies that the grade beams that connect piles or caissons are not exempt even though they are part of the foundation system. They are an essential part of the piles/caissons foundation system and should receive the same level of inspection. This amendment is for clarification purposes only. It does not change the intent of the Code provisions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Studies after the Northridge Earthquake revealed that great confusion exists in the field over what is required by the Code in the way of special inspection beyond just piles and caissons. Grade and tie beams are essential components of a pile/caisson foundation system, especially for how such a system responds to earthquake loads. Special inspection is needed to ensure that construction complies with Code requirements. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.170 – Amendment due to local geological and topographic conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake.

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This local amendment expands the California Building Code requirements for structural observation of the construction of certain types of buildings by the registered design professional in responsible charge for the structural design. One of the significant problems discovered from the studies after the Northridge Earthquake was the extent of poor quality in construction, especially for wood frame buildings. By requiring that the registered design professional in responsible charge for the structural design observe the actual construction to ensure acceptable standards of workmanship, the quality will be greatly increased. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.180 – Amendment due to local geological and topographic conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. This local amendment expands the California Building Code requirements for structural observation of the construction of certain types of buildings by the registered design professional in responsible charge for the structural design. One of the significant problems discovered from the studies after the Northridge Earthquake was the extent of poor quality in construction, especially for wood frame buildings. By requiring that the registered design professional in responsible charge for the structural design observe the actual construction to ensure acceptable standards of workmanship, the quality will be greatly increased. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

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Section 18.24.185 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reflect the appropriate reference to the Municipal Code for alternative material and design.

Section 18.24.190 – Amendment due to local geological and topographic conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. After the Northridge Earthquake, it was discovered that footings on sloping lots suffered severe damages and it was important to provide stronger footings in these situations by providing a detail of the stepped footing. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.200 – Amendment due to local geological and topographic conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. Footnote c regarding interior stud bearing walls that are not continuous was not adopted. The Long Beach region has varying geologic and topographic conditions that make it difficult to ensure uniformity in soil conditions over time. Additionally, due to the extremely high seismic nature in the region, structures perform better when continuous footings are provided for all bearing walls. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building

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Code.

Section 18.24.201 – Amendment due to local geological and climatic conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. Wood foundations without proper protection have proven to be ineffective in supporting structures and buildings due to deterioration caused by presence of water in the soil as well as other material detrimental to wood foundations. Most contractors are typically accustomed to construction in dry weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for wet applications. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. This region is especially susceptible to more active termite activity and wood attacking insects and microorganisms. The proposed modification to prohibit the use of wood for foundation support needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.202 – Amendment due to local geological and climatic conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. Wood foundations without proper protection have proven to be ineffective in supporting structures and buildings due to deterioration caused by presence of water in the soil as well as other material detrimental to wood foundations. Most contractors are typically accustomed to construction in dry weather in the Southern California region and are not generally familiar with the necessary precautions and treatment of wood that makes it suitable for wet applications. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault

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systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. This region is especially susceptible to more active termite activity and wood attacking insects and microorganisms. The proposed modification to prohibit the use of wood for foundation support need to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.210 – Amendment due to local geological and topographic conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. With the higher seismic demand placed on buildings and structures in this region, coupled with the geologic and topographic conditions here as opposed to the northern and eastern part of the country, it is deemed necessary to take precautionary steps to reduce or eliminate potential problems that may result by following a prescriptive design provision that does not take into consideration the surrounding environment. It was important that the benefit and expertise of a registered design professional be obtained to properly analyzed the structure and takes these issues into consideration. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to limit prescriptive design provisions that does not take into consideration the surrounding environment needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.220 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. This local amendment carries forward the previous 1999 and 2002 LARUCP amendment to require

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minimum reinforcement in continuous footings, thereby addressing the problem of poor performance of plain or under-reinforced footings during a seismic event. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. Section 14.8 was introduced in ACI 318-99 based on requirements of the Uniform Building Code and experimental research and on the basis that design of slender wall must satisfy both strength and serviceability requirements. ACI 318-05 provision was found to grossly under-estimate service load deflection. This update reduces the differences in serviceability provisions. The revision will essentially replace equations (14-8) and (14-9) with two new equations to reflect the UBC procedure for service load out-of-pane deflection. The proposed revision will be included in ACI 318-08. This amendment is intended to carry over critical provisions for the design of concrete columns in moment frames from the UBC. Increased confinement is critical to the integrity of such columns and these modifications ensure that is provided for when certain thresholds are exceeded. In addition, this amendment carries over from the UBC a critical provision for the design of concrete shear walls. It essentially limits the use of very highly gravity-loaded walls being included in the seismic load resisting system, since their failure could have a catastrophic effect on the building. Furthermore, this amendment was incorporated in the Code based on observations from Northridge earthquake. Rebar placed in a very thin concrete topping slab in some instances popped out of the slab due to insufficient concrete coverage. The modification ensures that critical boundary and collector rebars are placed in sufficiently thick slab to prevent buckling of such reinforcement. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification need to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of

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the International Building Code.

Section 18.24.230 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. Recent test results on braces used in steel concentrically braced frames (SCBF) indicate that many commonly used sections and brace configurations do not meet seismic performance expectations. Specific parameters that were shown to affect the ductility of braces included net-section, section type, width-thickness ratio of the cross section and member slenderness. Square and rectangular cross-section HSS were shown to be particularly susceptible to fracture due to local buckling behavior of the cross section and, therefore, are not recommended by SEAOSC Seismology and Steel Committee for special concentric braced frame applications. Grout-filled HSS members exhibit more favorable local buckling characteristics, significantly altering the post-yield behavior of these sections. Both SEAOSC Seismology and Steel Committee recommend the proposed modification. Furthermore, OSPHD and DSA-SS has taken the same position and added Section 2205A.4.1.5.1 to Chapter 22 of the 2007 California Building Code to reflect this recommendation. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Recent test studies regarding rectangular and square brace frame members need to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.240 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The proposed amendment continues the application of previous existing amendment by prohibiting the use of wood diaphragms in rotation based on numerous failures observed

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in the 1994 Northridge Earthquake. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to place limits on design of buildings based on rotation of wood diaphragm, which will reduce potential soft-story designs and excessive deflections in buildings, need to be incorporated into the code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.250 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. Many of the hold-down devices currently used still do not have any acceptance report based on dynamic testing protocol. The amendment continues limiting the allowable capacity to 75% of the evaluation report to provide an additional factor of safety for statically tested anchorage devices. Since the IBC now specifies the minimum size of steel plate washer, this proposed amendment, for purpose of consistency and uniformity of requirement, revised the size of the steel plate washer used in hold-down connectors to match that in IBC Section 2305.3.11 from the previous 1999 and 2002 LARUCP amendments. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to establish certain performance requirements for hold-down connectors, which is essential to preventing failure of a shear wall due to excessive deflection, needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.260 – Amendment due to local geological conditions. This

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section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The word "tolerances" is too broad a term. It is to be replaced with "dimensions", including diameter, minimum length and minimum head diameter. The overdriving of nails into the structural wood panel still remains a concern when pneumatic nail guns are used for shear wall nailing. Box nails were observed to cause massive and multiple failures of the typical 3/8-inch thick plywood during the Northridge Earthquake. The use of clipped head nails continues to be restricted from being used in shear wall panels where the minimum nail head size must be maintained in order to minimize nails from pulling through sheathing materials. Clipped or mechanically driven nails used in shear wall construction were found to perform much less in previous wood shear wall panel testing done at UCI. The existing test results indicated that, under cyclic loading, the shear panels were less energy absorbent and less ductile. The panels reached ultimate load capacity and failed at substantially less lateral deflection than those using same size hand driven nails. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to require mechanically driven nails to have the same dimension as hand driven nails resulting in improved quality of construction and performance of shear wall panels needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.270 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. This local amendment puts additional restrictions on the design of wood structural panel diaphragms. The amendment continues the application of the previous 1999 and 2002 LARUCP 23-3 amendment by allowing shear value capacities based on testing only and

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not calculations alone. By deleting the words that allow calculation of shear wall values, it will no longer be possible to circumvent the reductions in allowable shear capacities established in the Table. In September 2007, limited cyclic testing data was provided to the ICC Structural Code Committee showing that stapled wood structural shear panels do not exhibit the same behavior as the nailed wood structural shear panels. As a matter of fact, the test results of the stapled wood structural shear panels appeared much lower in strength and drift than the nailed wood structural shear panel test results. Therefore, the use of staples as fasteners for structural shear wall panels or diaphragms shall not be permitted without being substantiated by cyclic testing. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to place certain design and construction limits on structural wood panel diaphragms thus resulting in improved quality of construction and performance of structures needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.275 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. This local amendment puts additional restrictions on the design of wood structural panel diaphragms. The amendment continues the application of the previous 1999 and 2002 LARUCP 23-3 amendment by allowing shear value capacities based on testing only and not calculations alone. By deleting the words that allow calculation of shear wall values, it will no longer be possible to circumvent the reductions in allowable shear capacities established in the Table. In September 2007, limited cyclic testing data was provided to the ICC Structural Code Committee showing that stapled wood structural shear panels do not exhibit the same behavior as the nailed wood structural shear panels. As a matter of

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fact, the test results of the stapled wood structural shear panels appeared much lower in strength and drift than the nailed wood structural shear panel test results. Therefore, the use of staples as fasteners for structural shear wall panels or diaphragms shall not be permitted without being substantiated by cyclic testing. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to place certain design and construction limits on structural wood panel diaphragms thus resulting in improved quality of construction and performance of structures needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.280 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. This local amendment carries forward the previous LARUCP amendment to limit the maximum shear capacity for 3-ply plywood along with requiring greater edge distance for nails in shear walls resisting high loads, thereby addressing the problem of nails pulling out of the edges of the plywood under seismic loading. In addition, by deleting the words that allow calculation of shear wall values, it will no longer be possible to circumvent the reductions in allowable shear capacities established in the Table. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. Furthermore, the cities and county of the Los Angeles region have taken extra measures to maintain the structural integrity of the framing of the shear walls when designed for high levels of seismic loads by requiring wood sheathing be applied directly over framing members, thereby prohibiting the use of the second portion of Table 2306.4.1, which provides allowable values for panels placed

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over gypsum sheathing. This amendment is intended to prevent the undesirable performance of nails when gypsum board softens due to cyclic earthquake displacements and the nail ultimately does not have any engagement in a solid material within the thickness of the gypsum board. In September 2007, limited cyclic testing data was provided to the structural code committee showing that stapled wood structural shear panels do not exhibit the same behavior as the nailed wood structural shear panels. As a matter of fact, the test results of the stapled wood structural shear panels appeared much lower in strength and drift than the nailed wood structural shear panel test results. The allowable shear values for wood structural panel shear walls with stapled nails are based on monotonic testing. Earthquakes load shear walls in a repeating fully reversible manner. The Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Task Force previously investigated, documented damages, and reviewed existing test reports. The proposed amendment to omit the allowable shear capacity of shear wall with stapled nails is consistent with the Task Force previous recommendations made after the 1994 Northridge Earthquake. At that time, the report to the Governor from the Seismic Safety Commission of the State of California recommended that Code requirements be "more thoroughly substantiated with testing." Therefore, the use of staples as fasteners for structural shear wall panels or diaphragms shall not be permitted without being substantiated by cyclic testing. Wood structural shear panels fastened with nails (common and galvanized box) have been tested using various cyclic testing protocols that substantiate their design values in Table 2306.4.1. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to place certain design and construction limits on structural wood panel shear walls thus resulting in improved quality of construction and performance of structures needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the

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scope and objectives of the International Building Code.

Section 18.24.290 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. This local amendment carries forward the previous LARUCP amendment to limit the maximum shear capacity for 3-ply plywood along with requiring greater edge distance for nails in shear walls resisting high loads, thereby addressing the problem of nails pulling out of the edges of the plywood under seismic loading. In addition, by deleting the words that allow calculation of shear wall values, it will no longer be possible to circumvent the reductions in allowable shear capacities established in the Table. This amendment reflects the recommendations by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Task Force that investigated the poor performance observed in 1994 Northridge Earthquake. Furthermore, the cities and county of the Los Angeles region have taken extra measures to maintain the structural integrity of the framing of the shear walls when designed for high levels of seismic loads by requiring wood sheathing be applied directly over framing members, thereby prohibiting the use of the second portion of Table 2306.4.1, which provides allowable values for panels placed over gypsum sheathing. This amendment is intended to prevent the undesirable performance of nails when gypsum board softens due to cyclic earthquake displacements and the nail ultimately does not have any engagement in a solid material within the thickness of the gypsum board. In September 2007, limited cyclic testing data was provided to the structural code committee showing that stapled wood structural shear panels do not exhibit the same behavior as the nailed wood structural shear panels. As a matter of fact, the test results of the stapled wood structural shear panels appeared much lower in strength and drift than the nailed wood structural shear panel test results. The allowable shear values for wood structural panel shear walls with stapled nails are based on monotonic testing. Earthquakes load shear walls in a repeating fully reversible manner. The Structural Engineers Association of Southern California (SEAOSC) and the

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Los Angeles City Task Force previously investigated, documented damages, and reviewed existing test reports. The proposed amendment to omit the allowable shear capacity of shear wall with stapled nails is consistent with the Task Force previous recommendations made after the 1994 Northridge Earthquake. At that time, the report to the Governor from the Seismic Safety Commission of the State of California recommended that Code requirements be "more thoroughly substantiated with testing." Therefore, the use of staples as fasteners for structural shear wall panels or diaphragms shall not be permitted without being substantiated by cyclic testing. Wood structural shear panels fastened with nails (common and galvanized box) have been tested using various cyclic testing protocols that substantiate their design values in Table 2306.4.1. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification to place certain design and construction limits on structural wood panel shear walls thus resulting in improved quality of construction and performance of structures need to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.300 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. This amendment is consistent with the previous 1999 and 2002 LARUCP 25-2 amendment adopted by the cities and county of the Los Angeles region that reduced allowable shear values. Due to the high geologic activities in the Southern California area and the expected higher level of performance on buildings and structures, this local amendment continues to reduce the allowable shear values for shear walls sheathed with lath, plaster or gypsum board. The poor performance of such shear walls sheathed with other materials in the 1994 Northridge Earthquake was investigated by the Structural

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Engineers Association of Southern California (SEAOSC) and the Los Angeles City Task Force. The cities and county of the Los Angeles region have taken extra measures to maintain the structural integrity of the framing of the shear walls when designed for high levels of seismic loads. In September 2007, limited cyclic testing data was provided to the structural code committee showing that stapled wood structural shear panels do not exhibit the same behavior as the nailed wood structural shear panels. As a matter of fact, the test results of the stapled wood structural shear panels appeared much lower in strength and drift than the nailed wood structural shear panel test results. Therefore, the use of staples as fasteners for shear walls sheathed with other materials shall not be permitted without being substantiated by cyclic testing. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.310 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. This amendment is consistent with the previous 1999 and 2002 LARUCP 25-2 amendment adopted by the cities and county of the Los Angeles region that reduced allowable shear values. Due to the high geologic activities in the Southern California area and the expected higher level of performance on buildings and structures, this local amendment continues to reduce the allowable shear values for shear walls sheathed with lath, plaster or gypsum board. The poor performance of such shear walls sheathed with other materials in the 1994 Northridge Earthquake was investigated by the Structural Engineers Association of Southern California (SEAOSC) and the Los Angeles City Task Force. The cities and county of the Los Angeles region has taken extra measures to

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maintain the structural integrity of the framing of the shear walls when designed for high levels of seismic loads. In September 2007, limited cyclic testing data was provided to the structural code committee showing that stapled wood structural shear panels do not exhibit the same behavior as the nailed wood structural shear panels. As a matter of fact, the test results of the stapled wood structural shear panels appeared much lower in strength and drift than the nailed wood structural shear panel test results. Therefore, the use of staples as fasteners for shear walls sheathed with other materials shall not be permitted without being substantiated by cyclic testing. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.320 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The proposed amendment continues the previous 1999 and 2002 LARUCP amendment to require that interior braced walls be supported by continuous foundations. Interior walls can easily be called upon to resist over half of the seismic loading imposed on simple structures. Without a continuous foundation, earthquake loads would be transferred through a non-structural concrete slab floor or by a wood floor. Raised wood floor diaphragms and bolting of the perimeter walls can become inadequate to resist the imposed horizontal shear. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Conventional framing does not address the need for a continuous load path, critical shear transfer mechanisms, connection ties, irregular and flexible

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portions of complex shaped structures. Unless designed by a registered design professional, such buildings built by conventional framing requirements will be prone to serious damage in future large earthquakes. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.330 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The proposed amendment continues the previous 1999 and 2002 LARUCP amendment to limit the use of conventional wood frame construction to simple one story residential buildings when using conventional framing design. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Conventional framing does not address the need for a continuous load path, critical shear transfer mechanisms, connection ties, irregular and flexible portions of complex shaped structures. Unless designed by a registered design professional, such buildings built by conventional framing requirements will be prone to serious damage in future large earthquakes. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.340 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The proposed amendment continues the previous 1999 and 2002 LARUCP amendment to limit the additional weight attributed to the use of heavy veneer substantially increases loads to conventionally braced walls in an earthquake. Moreover, normal to wall loads

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that occur in an earthquake can seriously overstress wood bearing walls in combined seismic/gravity load combinations. Numerous conventionally framed veneer covered structures sustained serious damage in the Northridge Earthquake as a result of the heavy weight of the veneer. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Conventional framing does not address the need for a continuous load path, critical shear transfer mechanisms, connection ties, irregular and flexible portions of complex shaped structures. Unless designed by a registered design professional, such buildings built by conventional framing requirements will be prone to serious damage in future large earthquakes. The proposed modification need to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.350 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The proposed amendment continues the previous 1999 and 2002 LARUCP amendment to limit the use of conventional wood frame construction to 25 feet maximum spacing when using conventional framing design. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Conventional framing does not address the need for a continuous load path, critical shear transfer mechanisms, connection ties, irregular and flexible portions of complex shaped structures. Unless designed by a registered design professional, such buildings built by conventional framing requirements will be prone to serious damage in future large earthquakes. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing

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buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.360 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Conventional framing does not address the need for a continuous load path, critical shear transfer mechanisms, connection ties, irregular and flexible portions of complex shaped structures. Unless designed by a registered design professional, such buildings built by conventional framing requirements will be prone to serious damage in future large earthquakes. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.370 – Amendment due to local geological conditions. This section/amendment is consistent with the Los Angeles Regional Uniform Code Program set of amendments adopted by the cities and county of the Los Angeles region. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. Conventional framing does not address the need for a continuous load path, critical shear transfer mechanisms, connection ties, irregular and flexible portions of complex shaped structures. Unless designed by a registered design professional, such buildings built by conventional framing requirements will be prone to serious damage in future large earthquakes. The proposed modification needs to be incorporated into the Code to assure that new buildings and additions to existing buildings are designed and

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constructed in accordance with the scope and objectives of the International Building Code.

Section 18.24.380 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reflect the appropriate reference to the Municipal Code for inspections.

Section 18.24.390 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reference the appropriate section.

Section 18.24.400 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reflect the appropriate reference to the Municipal Code for application information.

Section 18.24.410 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reflect the appropriate reference to the Municipal Code for submittal requirements for construction documents.

Section 18.24.420 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reflect the appropriate reference to the Municipal Code for inspections.

Section 18.24.430 – Administrative amendment which adopts the latest edition of the California Building Code and makes minor editorial changes to reflect the new section reference.

Section 18.28.010 – Administrative amendment which adopts the latest edition of the California Electrical Code and makes minor editorial changes to update the references.

Section 18.28.020 – Administrative amendment which adopts the latest edition of the California Electrical Code and makes minor editorial changes to update the reference.

Section 18.36.010 – Administrative amendment which adopts the latest

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edition of the California Mechanical Code and makes minor editorial changes to update the reference.

Section 18.36.015 – Administrative amendment which adopts the latest edition of the California Mechanical Code and makes minor editorial changes to update the reference.

Section 18.36.030 – Administrative amendment which adopts the latest edition of the California Mechanical Code and makes minor editorial changes to update the reference.

Section 18.40.010 – Administrative amendment which adopts the latest edition of the California Plumbing Code and makes minor editorial changes to update the reference.

Section 18.40.020 – Administrative amendment which adopts the latest edition of the California Plumbing Code and makes minor editorial changes to update the reference.

Section 18.40.022 – Administrative amendment which adopts the latest edition of the California Plumbing Code and makes minor editorial changes to update the reference.

Chapter 18.69 – Amendment due to local geological conditions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The provisions of this proposed chapter are intended to promote public safety and welfare by reducing the risk of earthquake-induced damage to existing wood-framed residential buildings. The voluntary minimum standards contained in this proposed chapter shall substantially improve the seismic performance of these residential buildings but will not necessarily prevent all earthquake damage. When fully followed, these standards will strengthen the portion of the structure that is most vulnerable to earthquake damage. Prior to 1960, most wood frame residential buildings were built with raised wood floors supported by short

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wood stud walls known as cripple walls. These cripple walls are typically braced with weak seismic materials such as portland cement plaster or horizontal wood siding. In addition, wood frame buildings built under building codes in effect prior to July 1938 were not required to be bolted to their foundations. Recent earthquakes have shown that if a building has weak cripple walls or is unbolted, it may fall off its foundation even in moderate earthquakes. Fallen buildings have collapsed, caught fire or needed extensive repairs to restore their occupancy. This proposed chapter sets prescriptive standards for strengthening of under floor enclosures, if permitted by the building official, without requiring construction documents prepared by a registered design professional licensed by the State of California. This chapter also provides a design standard for the use of alternate materials or an alternate method of construction in lieu of the prescriptive standards.

Chapter 18.70 – Amendment due to local geological conditions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The purpose of this chapter is to promote the public welfare and safety by reducing the risk of death or injury that may result from the effects of earthquakes on existing wood-frame multi-unit residential buildings. The ground motion of the Northridge earthquake caused the loss of human life, personal injury and property damage in these types of buildings. This chapter creates minimum standards to strengthen the more vulnerable portions of these structures. When fully followed, these minimum standards will substantially improve the performance of these buildings but will not necessarily prevent all earthquake-related damage.

Chapter 18.71 – Amendment due to local geological conditions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The purpose of this

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chapter is to promote public safety and welfare by reducing the risk of death or injury that may result from the effects of earthquakes on concrete buildings and concrete frame buildings with masonry infills. The Northridge earthquake caused widespread damage to these buildings, including some collapses. The recent Great Hanshin earthquake in Kobe, Japan, also caused several hundred of these buildings to collapse. These nonductile concrete buildings are frequently used in Long Beach for department stores, office buildings, hotels, parking structures and some mid-rise condominiums. Their performance in an earthquake is essential to the life and safety of their occupants and the overall stability of the local economy. This chapter provides voluntary retrofit standards that, when fully followed, will substantially improve the seismic performance of these buildings but will not necessarily prevent all earthquake damage.

Chapter 18.72 – Amendment due to local geological conditions. The greater Los Angeles/Long Beach region is a densely populated area having buildings constructed over and near a vast array of fault systems capable of producing major earthquakes, including but not limited to the recent 1994 Northridge Earthquake. The purpose of this chapter is to promote public safety and welfare by reducing the risk of death or injury that may result from the effects of earthquakes on reinforced concrete and masonry wall buildings with flexible diaphragms designed under the building codes in effect prior to January 1, 1995. These buildings are potentially hazardous and prone to significant damage, including possible collapse, in a moderate to major earthquake. These structures typically shelter large numbers of persons and property for retail, food markets, food distribution centers, warehousing, aerospace, industrial/manufacturing and general business and office use. Their continued use after an earthquake is also essential to the local economy and its post-earthquake recovery. The provisions of this chapter are minimum standards for structural seismic resistance established primarily to reduce the risk of loss of life or injury on both subject and adjacent properties and will not necessarily prevent all earthquake damage to an existing building which complies with these standards. This Chapter shall not require existing electrical, plumbing, mechanical or fire

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safety systems to be altered unless they constitute a hazard to life or property. This Chapter provides voluntary retrofit standards for deficient wall anchorage systems on structures that are not subject to the mandatory provisions of Chapter 18.68. When fully followed, these standards will strengthen the portion of the structure that is most vulnerable to earthquake damage.

Section 2. The Director of Planning and Building is instructed to, and shall, transmit a copy of this resolution together with any appropriate supporting documentation, to the California Building Standards Commission in accordance with California Health and Safety Code Section 17958.7.

Section 3. This resolution shall take effect on January 1, 2008, upon its adoption by the City Council, and the City Clerk shall certify to the vote adopting this resolution.

I hereby certify that the foregoing resolution was adopted by the City Council of the City of Long Beach at its meeting of November 13, 2007 by the following vote:

Ayes:	Councilmembers:	B. Lowenthal, DeLong, O'Donnell, Schipske, Andrews, Gabelich, Lerch.
Noes:	Councilmembers:	None.
Absent:	Councilmembers:	S. Lowenthal, Reyes Uranga.

City Clerk

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