Introduced by _____

Ordinance NO. _____

AN ORDINANCE OF THE CITY OF PASADENA ADOPTING THE CALIFORNIA BUILDING CODE, 2001 EDITION, CHAPTERS 1-35 AND APPENDIX CHAPTERS 3 –DIVISION II, 9, 12, 15, 16, 18, 31, 33, AND 34-DIVISION III; THE 2001 CALIFORNIA BUILDING STANDARDS CODE PARTS 8, 10, AND 12; THE 2001 CALIFORNIA ELECTRICAL CODE; THE 2001 CALIFORNIA MECHANICAL CODE; THE 2001 CALIFORNIA PLUMBING CODE, AND THE 2001 CALIFORNIA ENERGY CODE ALL AS PUBLISHED BY THE CALIFORNIA BUILDING STANDARDS COMMISSION AND AS AMENDED BY THE STATE DEPARTMENT OF HOUSING AND COMMUNITY DEVELOPMENT (HCD), THE DIVISION OF THE STATE ARCHITECT/ACCESS AND COMPLIANCE (DSA/AC); AND THE OFFICE STATEWIDE HEALTH PLANNING AND DEVELOPMENT (OSHPD); THE 1997 UNIFORM HOUSING CODE; THE 1997 UNIFORM CODE FOR THE ABATEMENT OF DANGEROUS BUILDINGS, ALL AS PUBLISHED BY THE INTERNATIONAL CONFERENCE OF BUILDING OFFICIALS; THE CALIFORNIA FIRE CODE, 2001 EDITION; THE URBAN-WILD LAND INTERFACE CODE, 2000 EDITION, MODIFICATIONS OF SUCH CODES AS NECESSARY TO MEET LOCAL CONDITIONS.

The People of the City of Pasadena ordain as follows:

SECTION 1. This ordinance, due to its length and the corresponding costs of publication, will be published by title and summary as permitted by Section 508 of the Charter. The approved summary of this ordinance reads as follows:

"SUMMARY

This ordinance adopts the 2001 Edition of the California Building Code, the 2001 Edition of the California Fire Code, and related codes as required by State law. The ordinance also provides for some necessary amendments to the California Building Code to accommodate special topographic, geologic, and climatic conditions found in Pasadena, consistent with State law.

Ordinance No. _____ shall take effect upon the expiration of thirty days of its publication by title and summary."

SECTION 2. The following Sections of Chapter 14.03 of Title 14 of said Code are hereby amended to read as follows:

14.03.010 Adoption and filing

A. Except as herein provided by specific changes, the administrative, organizational and enforcement for the technical codes which regulate the site preparation and construction, alteration, moving, demolition, repair, use and occupancy of buildings, structures and building service equipment within the city shall be in accordance with the provisions and in the manner prescribed in administrative provisions of the 2001 Edition of the California Building Code, as published by the California State Building Standards Commission. .

14.03.020 Section 101.1 of the California Building Code amended.

Section 101.1 is amended to read:

This ordinance shall be known and cited as the Pasadena Building Code for Building Construction Regulation, and will be referred to here in as this Code.

14.03.030 Section 104.1 of the California Building Code amended.

Section 104.1, Creation of Enforcement Agency, is amended to read:

Sec. 104.1. There has been established heretofore in this jurisdiction a code enforcement agency entitled, The Planning and Development Department, which employs a Building Official who shall be authorized to enforce the provisions of this code.

14.03.045 Section 106.4 of the California Building Code amended.

106.4.4 EXPIRATION

A. Duration of Initial Permit

Notwithstanding any other provision of this section entitled "Permits Issuance", in residential zoning districts, all work for which a permit is required shall be completed within 18 months from the date of issuance of the permit. When work at a single site is authorized under multiple permits, the maximum duration as described above shall be determined by the issuance date of the earliest permit.

B. Initial Permit Extension

Should additional time be required, the permit tee may apply for and request an extension of time to complete the work. The building official may extend the time to complete the work for a period not to exceed 180

days upon written request by the permit tee showing good cause for such an extension of time. The building official may place conditions upon the granting of such an extension to protect the neighborhood.

C. Additional Permit Extension

If the work is still not completed after having been granted an extension by the building official, the permit tee may apply for a second extension of time to complete the work for a period of time not to exceed 180 days. Such application shall be subject to a fee as set forth in the City's fees schedule and be heard by a hearing officer in a noticed public hearing. The hearing officer may extend the time to complete the work for a period of time not to exceed 180 days upon written application by the permit tee showing good cause for the extension. The hearing officer may place conditions on the extension to protect the neighborhood.

D. Required Acts When Permit Expires

When the maximum duration for the completion of the work has expired, the permit tee shall do the following, even if the work in not completed:

1. Fill or secure all open excavations.
2. Secure and make weather tight all structures.
3. Remove all vehicles and heavy equipment associated with the work from the site and/or from adjacent streets and alleys.
4. Remove all portable sanitation facilities.
5. Cease all work at the site

E. Permits After a Work Moratorium

Work at a site that has continued for the maximum duration may not continue or resume for a period of one year. At the end of this period, work may resume. However, a new permit must first be obtained at the full fees prescribed and a plan, detailing a schedule of construction phases that will ensure that the project will be completed in a period of 6 months or less, must be submitted concurrently with the permit application to the building official for approval. Upon approval of the plan by the building official, the permit will be issued and such permit will expire 6 months after the date of issuance. If the work has not been completed within 6 months of the date of issuance of the permit, work may only continue upon application and payment of the appropriate fee for an extension. Such application will be considered by a hearing officer in a notice public hearing and will only be granted upon a finding of special circumstances or conditions that make the completion of the work within the mandated time impractical. The decision of the hearing officer may be appealed to the Board of Zoning appeals upon the payment of the prescribed fee.

F. Exception

Work that is limited exclusively to interior work may be extended in accordance with Section 106.4.4 provided that no construction related vehicles are parked on the street or alley, and that no construction material is stored in view of any adjacent property.

14.03.050 Section 107 of the California Building Code amended

Section 107 is amended as follows:

Table 1-A and all other permit fees of Section 107 are replaced by the tables of fees established by resolution pursuant to Chapter 14.37.

14.03.060 Section 107.3 of the California Building Code amended

Section 107.3 is amended to read:

107.3 PLAN REVIEW FEE

1. General. When a plan or other data are required to be submitted by Section 107.3, a plan review fee shall be paid at the time of submitting plans and other data for review. Said plan check fee shall be 100 percent of the building permit fee as provided by resolution pursuant to Chapter 14.37.

2. The plan review fee for electrical, mechanical, and plumbing work shall be equal to 25 percent of the total permit fee as provided by resolution pursuant to Chapter 14.37.

3. The plan review fee for grading work shall be as provided by resolution pursuant to Chapter 14.37.

4. The plan review fees specified in this subsection are separate fees from the permit fees specified on Section 107.3 and are in addition to the permit fees.

5. When completed plans are changed so as to require additional plan review, an additional plan review fee shall be charged as provided by resolution pursuant to Chapter 14.37.

SECTION 3. The following Sections of Chapter 14.04 of Title 14 of said Code are hereby amended as follows:

14.04.010 Adoption and filing

California Building Codes adopted. The 2001 California Building Code Chapters 1-35 and Appendix Chapters 3-Division II, 9,12, 15, 16, 18, 31, 33, and 34-Division III; the 2001 California Building Standards Code parts 8, 10, and 12; The 2001 California Electrical Code; The 2001 California Mechanical Code; the 2001 California Plumbing Code, and the 2001 California Energy Code all as published by the California Building Standards Commission and as amended by the State Department of Housing And Community Development (HCD), the Division of the State Architect/Access and Compliance (DSA/AC), and the State Office of Statewide Health, Planning and Development (OSHPD); The 1997 uniform Housing Code; The 1997 Uniform Code for the Abatement of Dangerous Buildings; all as published by the International Conference of Building Officials. One copy of all of the above publications are on file for public inspection and are hereby adopted with the same force and affect as though set out herein in full.

14.04.020 Changes and additions to the adopted codes

Pursuant to the Health and Safety Code Sections 17358.5 and 17958.7, the City establishes the following local modifications. The requisite findings if applicable for such requirements are set forth in the ordinance fact sheet accompanying this ordinance.

1. **In addition to required permits according to this Code, a building permit is required to:**

   A. Establish a parking lot;
   B. Pave an area in the front yard of a residential use;
   C. Erect a fence of more than 12 inches in height.

2. **Section 1402.4, Damp proofing Foundation Walls, of the California Building Code is amended to read as follows:**

   Unless otherwise approved by the building official, foundation walls enclosing usable space bellow finished grade shall be waterproofed in accordance with Appendix Chapter 18.

3. **Chapter 15 is amended by adding a section 1514 entitled roof sheathing to read as follows:**

   When finish roofing material is removed to the existing space sheathing, a minimum of 3/8-inch thick plywood sheathing shall be installed. The new sheathing shall comply with the requirements of Section 2320.12.9 of the California Building Code. The sheathing shall be installed such that the edges align over rafters and individual spaced sheathing boards. The sheathing shall be attached to the existing spaced sheathing with 6d

common nails at 6 inches (147mm) on center at supported edges and 6d common nails at 12 inches (294mm) on center at intermediate supports.

4. **Table 15-D-1 of the California Building Code is amended to read as set forth in APPENDIX A attached to this Code. (See Attachment "A")**

5. **Table 15-D-2 of the California Building code is amended to read as set forth in APPENDIX B attached to this Code. (See Attachment "B")**

6. **Section 1503 of the California Building Code is amended to read as follows:**

Roofing Requirements.

Roof coverings shall have a Class A rating, or be made of materials meeting the requirements of a Class B roofing assembly as specified in Table 15-A and as classified in Section 1504. The roof-covering assembly includes the roof deck, underlayment, interlayment, insulation and covering, which is assigned a roof covering classification. No wood roof covering material shall be installed on any structure located in the Extreme Hazard, High Hazard, or Moderate Fire Severity Zones as identified by the Pasadena Fire Department of the State of California. See Urban Wildland Interface Code.

CBC 1503.1 ROOF COVERINGS

1. Extreme Hazard and High Hazard Fire Severity Zones.

   The entire roof covering of every existing structure where more than 25 percent of the total roof area is replaced within any one-year period or the existing roof area is increased by 25 percent or more at any single time or accumulative times throughout the life of the structure, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair or replacement of the roof of every existing structure, shall be a fire-rated roof covering that is at least Class A non-combustible as defined in the Uniform Building Code and the Urban Wildland Interface Code.

2. Moderate Fire-Hazard Severity Zones.

   The entire roof covering of every existing structure where more than 50 percent of the total roof area is replaced within any one-year period or the existing roof area is increased by 50 percent or more at any single time or accumulative times throughout the life of the structure, the entire roof covering of every new structure, and any roof covering applied in the alteration, repair or replacement of the roof of every existing structure, shall be a fire-rated roof covering that is at least

Class A as defined in the Uniform Building Code and the Urban Wildland Interface Code. All Class A wood roof assemblies shall be California State Fire Marshal (CSFM) Listed.

3. Wood Shake or Wood Shingles shall not be installed on any exterior elevations of structures located within Extreme Hazard and High Hazard Fire Severity Zones or Moderate Fire-Hazard Severity Zones.

7. **Section 1629.4.2 of the California Building Code is amended to read as follows:**

1629.4.2. Seismic Zone 4 near-source factors. In Seismic Zone 4, each site shall be assigned a near-source factor in accordance with Table 16-S and the Seismic Source Type set forth in Table 16-U. The value of N_a used in determining C_a need not exceed 1.1 for structures complying with all the following conditions:

1. The soil profile type is S_A, S_B, S_C or S_D.
2. p = 1.0.
3. Except in single-story structures, Group R, Division 3 and Group U, Division 1 Occupancies, moment frame systems designated, as part of the lateral-force-resisting system shall be special moment-resisting frames.
4. The provisions in Sections 9.6a and 9.6b of AISC - Seismic Part I, shall not apply, except for columns in one-story buildings or columns at the top story of multistory buildings.
5. None of the following structural irregularities is present: Type 1, 4 or
   5 of Table 16-L, and Type 1 or 4 of Table 16-M.

8. Section 1630.8.2.2 of the California Building Code is amended to read as follows:

1630.8.2.2 Detailing requirements in Seismic Zones 3 and 4. In Seismic Zones 3 and 4, elements supporting discontinuous systems shall meet the following detailing or member limitations:

1. Reinforced concrete or reinforced masonry elements designed primarily as axial-load members shall comply with Section 1921.4.4.5.
2. Reinforced concrete elements designed primarily as flexural members and supporting other than light-frame wood shear wall systems or light-frame steel and wood structural panel shear wall systems shall comply with Sections 1921.3.2 and 1921.3.3. Strength computations for portions of slabs designed as supporting elements shall include only those portions of the slab that comply with the requirements of these Sections.

3. Masonry elements designed primarily as axial-load carrying members shall comply with Sections 2106.1.12.4, Item 1, and 2108.2.6.2.6.
4. Masonry elements designed primarily as flexural members shall comply with Section 2108.2.6.2.5.
5. Deleted.
6. Steel elements designed primarily as flexural members or trusses shall have bracing for both top and bottom beam flanges or chords at the location of the support of the discontinuous system and shall comply with the requirements of AISC-Seismic Part I, Section 9.4b.
7. Wood elements designed primarily as flexural members shall be provided with lateral bracing or solid blocking at each end of the element and at the connection location(s) of the discontinuous system.

9. Section 1630.10.2 of the California Building Code is amended to read as follows:

1630.10.2 Calculated. Calculated story drift using Δ_M shall not exceed 0.025 times the story height for structures having a fundamental period of less than 0.5 second. For structures having a fundamental period of 0.5 second or greater, the calculated story drift shall not exceed $0.020/T^{1/3}$ times the story height.

(Note: Exceptions to remain unchanged)

9. Items 4 and 7 of Section 1633.2.9 of the California Building code is amended to read as follows:

4. Diaphragms supporting concrete or masonry walls shall have continuous ties or struts between diaphragm chords to distribute the anchorage forces specified in Section 1633.2.8. The spacing of continuous ties shall not exceed 25 feet (7620 mm). Added chords of sub diaphragms may be used to form sub diaphragms to transmit the anchorage forces to the main continuous crossties. The maximum allowable diaphragm shear used to determine the depth of the sub diaphragm shall not exceed 300 pounds per foot (3.65 kN/m). The maximum length-to-width ratio of the wood structural sub diaphragm shall be 2½:1.

7. In structures in Seismic Zones 3 and 4 having a plan irregularity of Type 2 in Table 16-M, diaphragm chords and drag members shall be designed considering independent movement of the projecting wings of the structure. Each of these diaphragm elements shall be designed for the more severe of the following two assumptions:

Motion of the projecting wings in the same direction.

Motion of the projecting wings in opposing directions.

EXCEPTION: This requirement may be deemed satisfied if the procedures of Section 1631 in conjunction with a three-dimensional model have been used to determine the lateral seismic forces for design.

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

10. Table 16-N of the California Building Code is amended to read as set forth in APPENDIX C of this Code. (See Attachment "C")

12. Section 1701.5 Item 5.2 and 11 of the California Building Codes are amended to read as follows:

5.2 Lateral force resisting frames. During the welding of lateral force resisting steel frames. In addition to Item 5.1 requirements, nondestructive testing as required by Section 1703 of this code.

11. Piling, drilled piers, caissons and connecting grade beams. During driving and testing of piles and construction of cast-in-place drilled piles or caissons and connecting grade beams. See Items 1 and 4 for concrete and reinforcing steel inspection.

13. Section 1703 of the California Building Code is amended to read as follows:

1703 NONDESTRUCTIVE TESTING

In Seismic Zones 3 and 4, welded fully restrained connections between the primary members of moment-resisting frames, which are subject to net tensile forces as part of the lateral force resisting system shall be tested by nondestructive methods in accordance with AISC-Seismic Part I Section 16 for compliance with approved standards and job specifications. This testing shall be a part of the special inspection requirements of Section 1701.5. A program for this testing shall be established by the person responsible for structural design and as shown on plans and specifications.

As a minimum... *(no changes to the remainder of the Section)*

14. Section 1806.6.1 of the California Building Code is amended to read as follows:

1806.6.1 Additional requirements in Seismic Zones 3 and 4.

The following additional requirements shall apply in Seismic Zones 3 and 4.

1. Sill bolt diameter and spacing for three-story raised wood floor buildings shall be specifically designed.

2. Steel plate washers of minimum size and thickness as specified in Table 23-II-L shall be used on each bolt.

15. Section 1928.1.2.3 of the California Building Code is amended to read as follows:

1928.1.2.3 Basic Combinations. When permitted by Section 1928.1, structures, components and foundations shall be designed so that their design strength exceeds the effects of the factored loads in the following combinations:

1. $1.4D$
2. $1.2D + 1.6L + 0.5(L_r \text{ or } S \text{ or } R)$
3. $1.2D + 1.6(L_r \text{ or } S \text{ or } R) + (0.5L \text{ or } 0.8W)$
4. $1.2D + 1.3W + 0.5L + 0.5(L_r \text{ or } S \text{ or } R)$
5. $1.2D \pm 1.0E + (0.5L \text{ or } 0.2S)$
6. $0.9D \pm (1.3W \text{ or } 1.0\rho E_h)$

EXCEPTIONS: 1. The load factor on L in combinations 3, 4 and 5 shall equal 1.0 for garages, areas occupied and places of public assembly, and all areas where the live load is greater than 100 lb./ft.^{2} (pounds-force per square foot) (4.79 kPa).

Each relevant strength limit state shall be considered. The most unfavorable effect may occur when one or more of the contributing loads are not acting.

16. Section 2104.6.2 of the California Building Code is amended to read as follows:

2104.6.2 Construction requirements. Reinforcement shall be placed prior to grouting. Bolts shall be accurately set with templates or by approved equivalent means and held in place to prevent dislocation during grouting.

Segregation of the grout materials and damage to the masonry shall be avoided during the grouting process.

Grout shall be consolidated by mechanical vibration during placement before loss of plasticity in a manner to fill the grout space. Grout pours greater than 12 inches (300 mm) in height shall be reconsolidated by mechanical vibration to minimize voids due to water loss. Grout pours 12 inches (300 mm) or less in height shall be mechanically vibrated or puddled.

In one–story buildings having wood–frame exterior walls, foundations not over 24 inches (600 mm) high measured from the top of the footing may be

constructed of hollow–masonry units laid in running bond without mortared head joints. Any standard shape unit may be used, provided the masonry units permit horizontal flow of grout to adjacent units. Grout shall be solidly poured to the full height in one lift and shall be puddled or mechanically vibrated.

In nonstructural elements which do not exceed 8 feet (2440 mm) in height above the highest point of lateral support mortar of pouring consistency may be substituted for grout when the masonry is constructed and grouted in pours of 12 inches (300 mm) or less in height.

In multiwythe grouted masonry, vertical barriers of masonry shall be built across the grout space the entire height of the grout pour and spaced not more than 30 feet (9144 mm) horizontally. The grouting of any section of wall between barriers shall be completed in one day with no interruption longer than one hour.

17. Section 2204 of the California Building Code is Amended to read as follows:

Section 2204—DESIGN METHODS

Design shall be by one of the following methods.

2204.1 Loads and Resistance Factor Design. Steel design based on load and resistance factor design methods shall resist the factored load combinations of Section 1612.2 in accordance with the applicable requirements of Section 2205.

2204.2 Allowable Stress Design. Steel design based on allowable stress design methods shall resist the factored load combinations of Section 1612.3 in accordance with the applicable requirements of Section 2205.

18. Section 2205.3 of the California Building Code is amended to read as follows:

2205.3 Seismic Design Provisions for Structural Steel. Steel structural elements that resist seismic forces shall, in addition to the requirements of Section 2205.2 be designed in accordance with Division IV.

19. Divisions IV and V of Chapter 22 of the California Building Code are deleted in their entirety.

Division IV of Chapter 22 of the California Building Code is added to read as follows:

Division IV — SEISMIC PROVISIONS FOR STRUCTURAL STEEL BUILDINGS

Based on Seismic Provisions for Structural Steel Buildings, of the American Institute of Steel Construction. Parts I and III, dated April 15, 1997 and Supplement No. 2, dated November 10, 2000.

20. Section 2210 of the California Building Code is amended to read as follows:

2210 - ADOPTION

Except for the modifications as set forth in Sections 2211 and 2212 of this division and the requirements of the Building Code, the seismic design, fabrication, and erection of structural steel shall be in accordance with Part I (LRFD) and Part III (ASD) of the *Seismic Provisions for Structural Steel Buildings*, dated April 15, 1997 and Supplement No. 2, dated November 10, 2000, published by the American Institute of Steel Construction, 1 East Wacker Drive, Suite 3100, Chicago, IL 60601, as if set out at length herein and hereinafter referred to as AISC-Seismic.

Where other codes, standards, or specifications are referred to in AISC-Seismic, they are considered as acceptable methods or materials when approved by the Building Official.

21. Section 2211 of the California Building Code is amended to read as follows:

2211 – DESIGN METHODS

When the load combinations from Section 1612.2 for LRFD are used, structural steel buildings shall be designed in accordance with Chapter 22 Division II (AISC-LRFD) and Part I of AISC-Seismic as modified by this Division.

When the load combinations from Section 1612.3 for ASD are used, structural steel buildings shall be designed in accordance with Chapter 22 Division III (AISC-ASD) and Part III of AISC-Seismic as modified by this Division.

22. Section 2212 of the California Building Code is amended to read as follows:

2212 – AMENDMENTS

The AISC-Seismic adopted by this Division apply to the seismic design of structural steel members except as modified by this Section.

The following terms that appear in AISC-Seismic shall be taken as indicated in the 2001 California Building Code.

AISC-Seismic	2001 California Building Code
Seismic Force Resisting System	Lateral Force Resisting System
Design Earthquake	Design Basis Ground Motion
Load Combinations Eqs. (4-1) and (4-2)	Chapter 16 Eqs. (12-17) and (12-18) respectively
LRFD Specification Section Eqs. (A4-1) through (A4-6)	Chapter 16 Eqs. (12-1) through (12-6) respectively
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The AISC Seismic Provisions is modified as follows:

1. Revise Part I, Sec. 1 as follows:

1. SCOPE

These provisions are intended for the design and construction of structural steel members and connections in the Seismic Force Resisting Systems in buildings for which the design forces resulting from earthquake motions have been determined on the basis of various levels of energy dissipation in the inelastic range of response. These provisions shall apply to buildings in Seismic Zone 2 with an importance factor I greater than one, in Seismic Zone 3 and 4 or when required by the Engineer of Record.

These provisions shall be applied in conjunction with, Chapter 22, Division II, hereinafter referred to as the LRFD Specification. All members and connections in the Lateral Force Resisting System shall have a design strength as provided in the LRFD Specification to resist load combinations 12-1 through 12-6 (in Chapter 16) and shall meet the requirements in these provisions.

Part I includes a Glossary, which is specifically applicable to this Part, and Appendix S.

2. Revise Part I, Sec. 4.1 as follows:
4.1 Loads and Load Combinations

The loads and load combinations shall be those in Section 1612.2 except as modified throughout these provisions.

23. Section 2307 of the California Building Code is amended to read as follows:

2307 -- WOOD SUPPORTING MASONRY OR CONCRETE

Wood members shall not be used to permanently support the dead load of any masonry or concrete.

EXCEPTIONS:

1. Masonry or concrete nonstructural floor or roof surfacing not more than 4 inches (102 mm) thick may be supported by wood members.
2. Any structure may rest upon woodpiles constructed in accordance with the requirements of Chapter 18.
3. Veneer used as an interior wall finish may be supported on wood floors that are designed to support the additional load and designed to limit the deflection and shrinkage to 1/600 of the span of the supporting members.
4. Glass block masonry having an installed weight of 20 pounds per square foot (97.6 kg/m^2) or less and installed with the provisions of Section 2109.5. When glass block is supported on wood floors, the floors shall be designed to limit deflection and shrinkage to 1/600 of the span of the supporting members and the allowable stresses for the framing members shall be reduced in accordance with Division III, Part I.

See Division II, Part II for wood members resisting horizontal forces contributed by masonry or concrete.

24. Section 2315.1 of the California Building Code is amended to read as follows:

2315.1 – GENERAL

Lumber and wood structural panel horizontal and vertical diaphragms may be used to resist horizontal forces in horizontal and vertical distributing or resisting elements, provided the deflection in the plane of the diaphragm, as determined by calculations, tests or analogies drawn therefrom, does not exceed the permissible deflection of attached distributing or resisting elements. See UBC Standard 23-2 for a method of calculating the deflection of a blocked wood structural panel diaphragm.

Permissible deflection shall be that deflection up to which the diaphragm and any attached distributing or resisting element will maintain its structural integrity under assumed load conditions, i.e., continue to support assumed loads without danger to occupants of the structure.

Connections and anchorages capable of resisting the design forces shall be provided between the diaphragms and the resisting elements. Openings in diaphragms that materially affect their strength shall be fully detailed on the plans and shall have their edges adequately reinforced to transfer all shearing stresses.

Size and shape of each horizontal diaphragm and shear wall shall be limited as set forth in Table 23-II-G. The height of a shear wall shall be defined as:
1. The maximum clear height from foundation to bottom of diaphragm framing above, or
2. The maximum clear height from top of diaphragm to bottom of diaphragm framing above.

The width of a shear wall shall be defined as the width of sheathing. See figure 23-II-1, Section (a).

Where shear walls with openings are designed for force transfer around the openings, the limitations of Table 23-II-G shall apply to the overall shear wall including openings and to each wall pier at the side of an opening. The height of a wall pier shall be defined as the clear height of the pier at the side of an opening. The width of a wall pier shall be defined as the sheathed width of the pier at the side of an opening. Design for force transfer shall be based on a rational analysis. Detailing of boundary members around the opening shall be provided in accordance with Section 2315. See figure 23-II-1, Section (b). Vertical diaphragms shall also meet the story drift limitations of Section 1630.10.2 of this code.

In all buildings in Seismic Zone 4, lumber, and wood structural panel diaphragms shall not be considered as transmitting lateral forces by rotation.
EXCEPTION: One-story, attached or detached residential garages or similar Group U, Division 1 wood framed structures with a maximum depth normal to the open side of 25 feet (7260 mm) and a maximum width of 25 feet (7260 mm) provided the diaphragm is not constructed of straight sheathing.

In masonry or concrete buildings, lumber or wood structural diaphragms shall not be considered as transmitting lateral forces by rotation.

Diaphragm sheathing nails or other approved sheathing connectors shall be driven flush but shall not fracture the surface of the sheathing.

Cantilevered diaphragms are permitted for two story buildings. The length of the overhang shall not exceed 15 percent of the overall building dimension measured in the same direction nor one-fourth the width of the diaphragm, where the width is the dimension of the diaphragm perpendicular to the overhang.

25. Section 2315.3.3 of the California Building Code is amended to read as follows.

2315.3.3 - WOOD STRUCTURAL PANEL DIAPHRAGMS

Horizontal and vertical diaphragms sheathed with wood structural panels may be used to resist horizontal forces not exceeding those set forth in Table 23-II-H for horizontal diaphragms and Table 23-II-I-1 for vertical diaphragms.

Wood structural panels for horizontal diaphragms shall be as set forth in Tables 23-II-E-1 and 23-II-E-2 for corresponding joist spacing and loads. Wood structural panels in shear walls shall be at least 3/8 inch (9.5 mm) thick and studs spaced no more than 16 inches (406 mm) on center.

Maximum spans for wood structural panel sub floor underlayment shall be as set forth in Table 23-II-F-1. Wood structural panels used for horizontal and vertical diaphragms shall conform to UBC Standard 23-2 or 23-3.

All boundary members shall be proportioned and spliced where necessary to transmit direct stresses. Framing members shall be at least 2-inch (51 mm) nominal in the dimension to which the wood structural panel is attached. In general, panel edges shall bear on the framing members and butt along their centerlines. Nails shall be placed not less than 1/2 inch (12.7 mm) in from the panel edges and not less than 3/8 inch (9.5 mm) from the edge of the connecting members for shear greater than 300 pounds per foot (4.38kN/m). Nails shall be placed not less than 3/8 inch (9.5 mm) from panel edges and not less than 1/4 inch (6.4 mm) from the edge of the connecting members for shears of 300 pounds per foot or less. Nails shall be spaced not more than 6 inches (152 mm) on center along panel edge bearings, and shall be firmly driven into the framing members. No unblocked panels less than 12 inches (305 mm) wide shall be used.

Diaphragms with panel edges supported in accordance with Tables 23-II-E-1, 23-II-E-2 and 23-II-F-1 shall not be considered as blocked diaphragms unless blocking or other means of shear transfer is provided.

26. Section 2315.5.5 of the California Building Code is hereby deleted.

27. Section 2315.5.6 of the California Building Code is amended to read as follows:

2315.5.6 HOLD-DOWN CONNECTORS

Hold-down connectors shall be designed to resist shear wall overturning moments using approved cyclic load values or 75 percent of the allowable earthquake load values that do not consider cyclic loading of the product. Connector bolts into wood framing require steel plate washers in accordance with Table 23-II-L. Hold-downs shall be re-tightened just prior to covering the wall framing.

28. Section 2315 of the California Building Code is amended by adding section 2315.5.7 to read as follows:

2315.5.7 SHEAR WALL DISPLACEMENT ANALYSIS

Wood structural panel shear walls shall meet the story drift limitation of Section 1630.10 of this Code. Conformance to the story drift limitation shall

be determined by approved testing or calculation or analogies drawn therefrom and not the use of an aspect ratio. Calculated deflection shall be determined according to U.B.C. Standard 23-2, Section 23.223 "Calculation of Shear Wall Deflection," and shall be increased 25 percent to account for inelastic action and repetitive loading. Contribution to the deflection from the anchor or tie down slippage shall also be included. The slippage contribution shall include the vertical elongation of the metal, the vertical slippage of the fasteners and compression or shrinkage of the wood elements. The total vertical slippage shall be multiplied by the aspect ratio and added to the total horizontal deflection.

29. Section 2315 of the California Building Code is amended by adding a section 2315.5.8 to read as follows:

2315.5.8 QUALITY OF NAILS

Mechanically driven nails used in shear wall panel construction shall meet the same tolerances as that required for hand-driven nails. The allowable design value for clipped nails in existing construction may be taken at no more than the nail-head-area ratio of that of the same size hand-driven nails.

30. Section 2315.6 of the California Building Code is hereby deleted.

31. Chapter 23 of Title 25 of California Building Code is amended by adding Table 23-II-L to read as follows:

Table 23-II-L MINIMUM SIZE STEEL PLATE WASHERS

Bolt Size	Plate Size
x 25.4 for mm	x 25.4 for mm
1/2 in	3/16" x 2" x 2"
5/8 in	1/4" x 2-1/2" x 2-1/2"
3/4 in	5/16" x 2-3/4" x 2-3/4"
7/8 in	5/16" x 3" x 3"
1 in	3/8" x 3-1/2" x 3-1/2"

32. Table 23-II-I-1 of the California Building Code is amended to read as set forth in APPENDIX D of this Code. (See Attachment "D")

33. Section 2320.1 of the California Building Code is amended to read as follows:

2320.1 GENERAL

The requirements in this section are intended for conventional light-frame construction. Other methods may be used provided a satisfactory design is submitted showing compliance with other provisions of this code.

Only the following occupancies may be constructed in accordance with this division:

1. One story buildings housing Group R Occupancies. Cripple walls shall be considered as a story.
2. One-story Occupancy Category 4 buildings, as defined in Table 16-K, when constructed on a slab-on-grade floor.
3. Group U Occupancies.
4. (Not adopted.)
5. For all occupancies interior nonload-bearing partitions, 8 feet (2438 mm) or higher shall be laterally braced at the top at 8 feet (2438 m) maximum on center.

When total loads exceed those specified in Tables 23-IV-J-1, 23-IV-J-3, 23-IV-R-1, 23-IV-R-2, 23-IV-R-3, 23-IV-R-4, 23-IV-R-7, and 23-IV-R-8, 23-IV-R-9, 23-IV-R-10, 23-IV-R-11, 23-IV-R-12; 23-VII-R-1, 23-VII-R-3, 23-VII-R-7, 23-VII-R-9, 23-VIII-A, 23-VIII-B, 23-VIII-C, 23-VIII-D, an engineering system shall be provided for the gravity load system.

Other approved repetitive wood members may be used in lieu of solid-sawn lumber in conventional construction provided these members comply with the provisions of this code.

34. Section 2320.5.1 of the California Building Code is amended to read as follows:

2320.5.1. BRACED WALL LINES

Buildings shall be provided with exterior and interior braced wall lines. Spacing shall not exceed 25 feet (7620mm) on center in both the longitudinal and transverse directions in each story.

35. Section 2320.5.3 of the California Building Code is amended to read as follows:

2320.5.3. VENEER

Anchored masonry and stone wall veneer shall not exceed 5 inches (127 mm) in thickness, shall conform to the requirements of Chapter 14 and shall not extend more than 5 feet (1219 mm) above the first story finish floor.

36. Section 2320.5.6 of the California Building Code is amended to read as follows:

2320.5.6. INTERIOR BRACED WALL SUPPORT

Interior braced wall lines shall be supported on continuous foundations.

37. Section 2320.9.2 of the California Building Code is amended to read as follows:

2320.9.2. WOOD STRUCTURAL PANELS

Where used as structural sub flooring, wood structural panels shall be as set forth in Tables 23-II-E-1 and 23-II-E-2. Wood structural panel combination sub floor underlayment shall have maximum spans as set forth in Table 23-II-F-1.

38. Section 2320.11.3 of the California Building Code is amended to read as follows:

2320.11.3 BRACING

Braced wall lines shall consist of braced wall panels, which meet the requirements for location, type and amount of bracing specified in Table 23-IV-C-1 and are in line or offset from each other by not more than 4 feet (1219 mm). Braced wall panels shall start at not more than 8 feet (2438 mm) from each end of a braced wall line. All braced wall panels shall be clearly indicated on the plans. Construction of braced wall panels shall be by one of the following methods:

1. Deleted.

2. Deleted.

3. Wood structural panel sheathing of a thickness not less than ½ inch (11.9 mm) nominal of structural I grade for a maximum 16-inch (406 mm) stud spacing in accordance with Tables 23-II-A-1 and 23-IV-D-1. Nailing shall be minimum 8d common placed 3/8 inches from panel edges and spaced not more than 6 inches on center, and 12 inches on center along intermediate framing members.

4. Deleted.

5. Deleted.

6. Deleted.

7. Portland cement plaster on studs spaced 16 inches (406 mm) on center installed in accordance with Table 25-I.

8. Deleted.

For Methods 3 each braced panel must be at least 48 inches (1219 mm) in length, covering three stud spaces where studs are spaced 16 inches (406 mm) apart and have a height-to-length ratio not exceeding 2 to 1 For Method 7 each braced wall panel must be at least 96 inches (2438 mm) in length and have a height-to-length ratio not exceeding 1 to 1.

All vertical joints of panel sheathing shall occur over studs. Horizontal joints shall occur over blocking equal in size to the studding except where waived by the installation requirements for the specific sheathing materials.

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

Braced wall panel sole plates shall be nailed to the floor framing and top plates shall be connected to the framing above in accordance with Table 23-II-B-1. Sills shall be bolted to the foundation or slab in accordance with Section 1806.6 of this_code. Where joists are perpendicular to braced wall lines above, blocking shall be provided under and in line with the braced wall panels. All braced wall panels shall extend to the roof sheathing and shall be attached to parallel roof rafters or blocking above with framing clips (18 gauge minimum) spaced at maximum 24 inches (6096 mm) on center with four 8d nails per leg (total eight 8d nails per clip). Braced wall panels shall be laterally braced at each top corner and at maximum 24-inch (6096 mm) intervals along the top plate of discontinuous vertical framing.

39. Section 2320.11.4 of the California Building Code is amended to read as follows:

2320.11.4. ALTERNATE BRACED WALL PANELS

For one story Group U, Division 1, occupancies a braced wall panel required by Section 2320.11.3 may be replaced by an alternate braced wall panel constructed in accordance with the following:

1. In one-story buildings, each panel shall have a length of not less than 2 feet 8 inches (813 mm) and a height of not more than 10 feet (3048 mm). Each panel shall be sheathed on one face with ½-inch-nominal minimum-thickness (12.7 mm) plywood sheathing nailed with 8d common or galvanized box

nails in accordance with Table 23-II-B-1 and blocked at all plywood edges. Two anchor bolts installed in accordance with Section 1806.6 shall be provided in each panel. Anchor bolts shall be placed at panel quarter points. Each panel end stud shall have a tie-down device fastened to the foundation, capable of providing an approved uplift capacity of not less than 1,800 pounds (816.5 kg). The tie-down device shall be installed in accordance with the manufacturer's recommendations. The panels shall be supported directly on a foundation or on floor framing supported directly on a foundation, which is continuous across the entire length of the braced wall line. This foundation shall be reinforced with not less than one No. 4 bar top and bottom, or

2. Braced wall panels required by Section 2320.5.1 may be eliminated when all of the following requirements are met:

a. Detached or attached garage is no more than 25 feet in depth or length.
b. The roof and three enclosing walls are solid sheathed with ½ inch nominal thickness wood structural panels with 8d common nails placed 3/8 inches from panel edges and spaced not more than 6 inches on center along all panel edges and 12 inches on center along intermediate framing members. Wall openings for doors or windows are permitted provided a minimum 4 foot wide wood structural braced panel with minimum height to length ratio of 2 to 1 is provided at each end of the wall line and that the wall line be sheathed for 50% of its length.

40. Table 23-IV-C-1 of the California Building Code is amended to read as set forth in APPENDIX E of this Code. (See Attachment "E")

41. Section 2513.4 of the California Building Code is amended to read as follows:

2513.4 Height-to-Length Ratio. The maximum allowable height-to-length ratio for the construction in this Section shall be 2 to 1. Wall sections having height-to-length ratios in excess of 1-1/2 to 1 shall be blocked. All shear walls designed to resist seismic loads in Seismic Zone 4 shall have a maximum allowable height-to-length ratio of 1 to 1.

42. Table 25-I of the California Building Code is amended to read as set forth in APPENDIX F of this Code. (See Attachment "F")

43. Section 3102.4.3 of the California Building Code is amended to read as follows:

3102.4.3 REINFORCING AND SEISMIC ANCHORAGE

The masonry and concrete chimneys shall be designed in accordance with the requirements in Chapter 21 and shall be tied to a structural element of the

building capable of providing lateral resistance for the horizontal forces specified in Section 1632. The anchorage of the ties to the resisting structural element shall be designed for the loads specified in Section 1632.

14.04.040 Board of Appeals

All sections in the respective codes pertaining to the Board of Appeals are hereby amended in their entirety to read as follows:

In order to hear and decide appeals or orders and determine the suitability of alternate materials and methods of construction and to provide for reasonable interpretations of the provisions of these Codes, there shall be and there is hereby created a Board of Appeals, composed of the Mayor and the City Council.

The city clerk shall be the secretary to the Board. The Board may adopt reasonable rules and regulations for conducting its investigations and shall render all its decisions and findings on contested matters, in writing to the building official, with a duplicate copy thereof to any appellant or contestant affected by any such decision of findings, and may recommend to the City Council such new legislation, if any, as is consistent therewith.

The City council may prescribe by resolution, to employ at the cost and expense of the City, such qualified individuals as the Board, in its discretion, may deem reasonably necessary in order to assist it in its investigations and in making its findings and decisions.

14.04.050 Fees

The council shall by resolution adopt a schedule of fees for the permits issued pursuant hereto.

14.04.080 Moved Building.

Section 3404 of the California Building Code is amended by adding the following:

Before a permit is issued, the building-mover shall furnish and file with the City Clerk, a good and sufficient bond in the principal sum of $5,000.00 in favor of the City of Pasadena for the benefit of any person, firm or corporation who may be damaged directly by the moving of said building or structure, provided that any person, firm or corporation engaged in the business of moving buildings may file with the City Clerk a surety bond in the sum of $10,000.00 indemnifying the City for the purposes, and in that event such person, firm or corporation need not file the $5,000.00 bond herein above required for any single moving operation.

SECTION 4. The following Sections of Chapter 14.06 of Title 14 of said code are hereby amended as follows:

14.06.010 Adoption

A. The City adopts the 2001 California Code for Building Conservation plus appendices 1,2,3 as published by the California Building Standards Commission. Once copy of the above publication is on file for public inspection.

B. This chapter shall be known and cited as the Pasadena Code for Building Conservation, and will be referred to herein as the "CCBC". The provisions of the CCBC shall be the minimum standard for reusing existing buildings and for strengthening URM buildings. Except as specifically amended herein, the CCBC shall govern the construction required to reuse existing URM buildings or to strengthen URM buildings.

14.06.020 Definitions

The following definitions shall supersede those found in the CCBC:
"Qualified Historic Building" means any building or structure, which meets one of the following criteria:

1. A landmark or Pasadena historic treasure designated according to the provision of Section 2.75.140 or 2.75.150 of this code: or
2. A building or structure than contributes to a designated landmark or district; or
3. A building or structure that is listed in the National Register of historic places, either individually or as a contributing element to a district or to a thematic category designation; or
4. A building or structure that is eligible for designation as a landmark or as a Pasadena historic treasure or appears to be contributing element to a potential landmark district; or
5. A building or structure that is eligible for nomination to the National Register of Historic Places, either individually or as a contributing element to a district or to a thematic category designation.

14.06.040 Building Permits Required

In addition to the architectural and engineering details required under California Building Code Section 106.03.2 and 106.3.3, URM retrofit plans shall provide the following added information:

A. Significant exterior architectural features of the building and a description of how these elements will be affected by the retrofit:
B. The tests that will be made to determine the strength of the existing wall(s), where the test will be taken and, if destructive, how restoration and repair will be done to match the existing material:
C. Detailed specifications of how historic elements affected by retrofit will be restored.

14.06.200 Penalty

Subsection A is amended to read:

A. A URM not retrofitted in compliance with this chapter is declared a nuisance, presumed to be dangerous, and is to be abated according to the process for the abatement of unsafe buildings and structures as set forth in the California Building Code Sectiono102 as the same may be amended from time to time.

14.06.210 Appeals

Appeals of the application and administration of this code and the special requirements applicable to qualified historic buildings made by the Design Commission of the Cultural Heritage Commission shall be made to the City Council pursuant to Chapter 2.75 or 17.92 of this code. Other appeals of the application and administration of this chapter and those relating to the technical engineering aspects of the referenced California Building Codes shall be handled according to the appeal provisions of the California Building Code.

SECTION 5. Subsection "I" of Section 14.25.020 Definitions of Title 14 of this code is hereby amended to read as follows:

I. "Nationally recognized standards" means any and all of the following:

1. All documents, codes, appendices, and standards adopted in Chapter 14.28 of this code.
2. The 1999 Editions of the National Fire Protection Association Pamphlets Number 13, 13D, 14, 20, 24, 72, 231 and 231C.

SECTION 6. The following sections of Chapter 14.28 of Title 14 of said Code is hereby amended as follows:

14.28.010 California Fire Code Adopted.

Except as is otherwise provided for in this chapter by specific provision, the minimum standards, provisions and requirements for the safe construction and maintenance of property, facilities, conditions, materials, equipment, fire prevention and alarm systems, and the general supervision thereof for the purpose of combating and control of fire and fire hazards and abatement of same, within the corporate limits of the city, shall be in accordance with the provisions and in the manner prescribed by the California Fire Code, 2001 Edition ("California Fire Code"), together with Appendices Divisions I, II, III, IV, and VI and California Fire Code Standards – Articles 10, 24, 52, 62, 74, 79, 80, 81, 82 and 88; APPENDIX A-III-C-I; Urban Wildland Interface Code 2000 Edition, Appendices Division I and II all as compiled and adopted by the International Fire Code Institute. One copy of the above publications is on file for public inspection and they are adopted and incorporated herein as if fully set forth in this chapter."

14.28.020 Section 101.4 of the California Fire Code amended – Rules and regulations.

Section 101.4 of the California Fire Code is amended to read:

"Sec. 101.4 The Chief, with the approval of the City Council is authorized to make and enforce such rules and regulations for the prevention and control of fires and fire hazards as may be necessary from time to time to carry out the intent of this California Fire Code."

SECTION 7. This ordinance shall take effect upon the expiration of 30 days form its publication by title and summary.

SECTION 8. The City Clerk shall file a certified copy of this ordinance with the Department of Housing and Community Development, and the California Building Standards Commission.

SECTION 9. Severability. In any section, subsection, subdivision, sentence clause, phrase of portion of this ordinance is, for any reason, held to be invalid of unconstitutional by the decision of any court of competent jurisdiction, such decision shall not affect the validity of the remaining portions of this Ordinance. The City Council

hereby declares that it would have adopted this ordinance and each section, subsection, subdivision, sentence, clause, phrase, or portion thereof, irrespective of the fact that any one or more section, subsection, subdivision, sentence clause, phrase, or portions thereof be declared invalid of unconstitutional.

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SECTION 10. The City Clerk shall certify the adoption of this ordinance and shall cause this ordinance to be published by title and summary.

Signed and approved this _____ day of _____, 2002.

_____
William J. Bogaard
Mayor of the City of Pasadena

I HEREBY CERTIFY that the foregoing ordinance was adopted by the City Council of the City of Pasadena at its regular meeting held on _____, 2002, by the following vote:

AYES:
NOES:
ABSENT:
ABSTAIN:

Published:

_____
Jane L. Rodriguez, CMC
City Clerk

APPROVED AS TO FORM:

_____
Frank L. Rhemrev
Assistant City Attorney