

ORDINANCE NO. 90-28 C.S.

AN ORDINANCE ESTABLISHING MINIMUM EARTHQUAKE
HAZARD REDUCTION STANDARDS IN EXISTING
UNREINFORCED MASONRY WALL BUILDINGS

ACG

THE CITY COUNCIL OF THE CITY OF HAYWARD DOES ORDAIN AS
FOLLOWS:

Section I. A new ordinance is hereby enacted to read as
follows:

SECTION 1.00 FINDINGS AND DETERMINATION. The City
Council of the City of Hayward does hereby find and determine
as follows:

(a) The Legislature of the State of California has
enacted Senate Bill No. 547 (Stats. 1986, Chapt. 250) adding
Chapter 12.2 (commencing with Section 8875) to Division 1 of
Title 2 of the Government Code requiring seismic hazard
identification and mitigation of unreinforced masonry buildings
in all cities, both general law and chartered and counties or
portions thereof, located within Seismic Zone 4, as defined in
said bill.

(b) The City of Hayward, a chartered city, is located
within Seismic Zone 4.

(c) The City Council desires to lessen the risks to life
and property of the residents of the City of Hayward as posed
by earthquakes.

(d) The City Council has determined to implement a
seismic hazard identification and mitigation program that
requires owners of unreinforced masonry buildings to
investigate and correct the potential seismic hazards of their
buildings in the time and manner specified in this ordinance.

SECTION 2.00 PURPOSE. The purpose of this ordinance is
to promote public safety and welfare by establishing minimum
standards for structural seismic resistance in unreinforced
masonry wall buildings in order to reduce the risk of death or
injury that may result from the effects of earthquakes on such
buildings.

Compliance with these standards will not necessarily
prevent loss of life or injury or prevent earthquake damage to
rehabilitated buildings.

This ordinance provides systematic procedures and standards for identification and classification of unreinforced masonry wall buildings based on their present use; and, where appropriate, the strengthening or demolition of the building.

SECTION 2.01 SCOPE.

(a) General. The provisions of this ordinance shall apply to all buildings constructed or under construction prior to October of 1944 or for which a building permit was issued prior to August 1944, which on the effective date of this ordinance have unreinforced masonry walls as defined herein, with the exception of:

- (1) Detached single family dwellings.
- (2) Federal or State government owned buildings.

(b) Provisions Also Covered In Code. When provisions of this ordinance and provisions of the Uniform Building Code as adopted by or made applicable to the City, hereinafter Uniform Building Code or Building Code, conflict, the provisions of this ordinance shall govern.

SECTION 2.02 DEFINITIONS.

(a) Unreinforced Masonry Wall: Shall mean a masonry wall having less than 50 percent of the area of reinforcing steel required by Section 2407(h) of the Uniform Building Code. Such walls may be bearing walls, providing vertical support for a floor or roof; or infill walls, supporting no vertical loads, in buildings where vertical loads are carried by substantially complete space frames.

(b) Cross Wall: Shall mean a masonry or wood frame interior wall, spaced less than 40 feet from an adjacent exterior wall or another cross wall in the direction perpendicular to the wall. Such walls shall be full story height in each story and have a minimum length of 1-1/2 times the story height.

SECTION 2.03 NOTICE AND ORDER. Whenever the Building Official determines by inspection that any building is constructed with unreinforced masonry walls, he shall initiate proceedings to cause the eventual conformance of such buildings to the standards of this ordinance. The Building Official shall issue a notice and order directed to the record owner of the building, which notice and order shall contain:

(a) The street address and a legal description sufficient for identification of the premises upon which the building is located.

(b) A statement that the Building Official has found the building to be constructed with unreinforced masonry walls and, therefore, subject to the minimum seismic standards set forth in this ordinance. The order shall specify the classification of the building based upon its present use, utilizing the classification set forth in the Uniform Building Code.

(c) A statement requiring the owner of record to cause a structural analysis of the building to be made by a civil or structural engineer or architect, licensed by the State of California.

(d) A statement requiring the owner of record to submit to the Building Official within two (2) years of the service of the notice and order, the results of the structural analysis, which shall either: (1) demonstrate to the satisfaction of the Building Official that the building meets the minimum requirements of this ordinance; (2) shall include a structural analysis and plans for the proposed alterations of the building necessary to comply with the minimum requirements of this ordinance; or, (3) shall include plans for the demolition of the building.

(e) A statement advising that any person having any title or legal interest in the building may appeal from the notice and order of the Building Official in the manner set forth in this ordinance within thirty (30) days from the date of service of the notice and order.

SECTION 2.04 SERVICE OF NOTICE AND ORDER OF BUILDING OFFICIAL. The notice and order shall be served upon the owner of record in the manner hereinafter stated, and posted conspicuously at the primary entrance to the building. One copy thereof shall also be served on each of the following: the holder of mortgage or deed of trust or other lien or encumbrance of record; the owner or holder of any lease of record; and the holder of any other estate or legal interest of record in the building or the land upon which it is located.

Service of the notice and order shall be made upon all persons entitled thereto either personally or by mailing a copy of such notice and order by certified mail, postage prepaid, return receipt requested, to each such person at the address as it appears on the last equalized assessment roll of the county or as known to the Building Official. If no address of any such person so appears or is known to the Building Official, then a copy of the notice and order shall be so mailed, addressed to such person, at the address of the building involved in the proceedings. The failure of any owner or other person to receive such notice shall not affect in any manner the validity of any proceedings taken hereunder.

Upon service of the notice and order as provided herein, the Building Official shall file an affidavit certifying to the time and manner in which the notice and order was served and posted. He shall also file therewith any receipt card which may have been returned to him in acknowledgment of receipt of the notice and order by certified mail.

SECTION 2.05 RECORDATION OF NOTICE AND ORDER. At the time the notice and order is served, the Building Official shall cause to be filed with the Office of the County Recorder a "certificate of substandard structure", setting forth the determination of the Building Official and the requirements imposed by the notice and order.

SECTION 2.06 RECORDATION OF RESCISSION OF NOTICE AND ORDER. If after issuance and service of the notice and order, a building is determined, either by the Building Official or the Building Abatement Appeals Board, to not be subject to the requirements of this ordinance, the Building Official shall file with the Office of the County Recorder a certificate rescinding the notice and order and finding the building not to be subject to the requirements of this ordinance.

SECTION 2.07 OBTAINING OF BUILDING OR DEMOLITION PERMIT; COMMENCEMENT OF WORK; COMPLETION OF WORK.

(a) Within one (1) year from the date plans for the proposed structural alterations of the building or plans for the demolition of the building are submitted to the Building Official, the owner of record shall obtain the necessary building or demolition permit. Notice of the plan approval shall be given in the manner set forth in Section 2.04.

(b) Within six (6) months from the date the permit is issued, the owner of record shall commence the work authorized by the permit, and within two (2) years from the date the permit is issued, the owner of record shall complete the work.

SECTION 2.08 FAILURE TO COMPLY, VACATION; DEMOLITION. Should the owner of record fail to comply with the orders described in Sections 2.03 and 2.07 or with any other orders issued by the Building Official pursuant to this ordinance, the Building Official shall order the entire building vacated until the order has been complied with. If the building is not vacated within ninety (90) days after the date of the order, the building may be deemed a public nuisance and the Building Official may order the demolition of the building in accordance with Article 3 of Chapter 9 of the Hayward Municipal Code.

SECTION 2.09 ORDERS; SERVICE; RECORDATION; APPEAL; ENFORCEMENT.

(a) Any order issued by the Building Official pursuant to this ordinance in addition to the order described in Section 2.03, shall be served and recorded in the manner set forth in Sections 2.04 and 2.05 respectively.

(b) Any order issued by the Building Official pursuant to this ordinance may be appealed by any person having any record interest in the building in the manner set forth in Article 3 of Chapter 9 of the Hayward Municipal Code, within thirty (30) calendar days from the date of service of the notice and order. All appeals shall be conducted consistent with and be subject to provisions of Article 3 of Chapter 9 of the Hayward Municipal Code. The decision of the Abatement Appeals Board is final. Any aggrieved party shall have ninety (90) days from the effective date of the decision of the Board to bring an action in a court of competent jurisdiction to contest the validity of the proceedings or decision of the Board, otherwise all right to maintain any action, suit, or proceeding to set aside or modify the Board's decision will be waived.

(c) Any order by the Building Official, or the Board of Appeals shall be enforceable in the manner set forth in Article 3 of Chapter 9 of the Hayward Municipal Code.

SECTION 3.01 ANALYSIS AND DESIGN.

(a) General. Every structure within the scope of this Division shall be analyzed and constructed to resist minimum total lateral seismic forces assumed to act nonconcurrently in the direction of each of the main axes of the structure in accordance with the following equation:

$$V = 0.133W \quad (1)$$

This standard is intended to allow the building to resist slightly more than thirteen hundredths of its weight in lateral base shear.

(b) Lateral Forces on Elements of Structures. Parts or portions of buildings shall be analyzed and designed for lateral loads in accordance with subsection (a) above and Section 2312 (2) of the *Uniform Building Code but not less than the value from the following equation:

$$F_p = C_p W_p \quad (2)$$

(See Table 6 of this ordinance for explanation of symbols)

The value of C_p need not exceed the values set forth in Table 1 of this ordinance.

*This Section and other sections of the UBC, refer to the 1988 Uniform Building Code.

Alternative lateral force procedures using rational analyses based on well established principles of mechanics may be used in lieu of those prescribed in these provisions, if the Building Official determines they are substantially equivalent or exceed the standards set forth herein.

(c) Anchorage and Interconnection. Anchorage and interconnection of all parts, portions and elements of the building shall be analyzed and designed for lateral forces in accordance with Section 301(b) above. Anchorage of masonry walls to each floor or roof shall resist a minimum force of 200 pounds per linear foot acting normal to the wall at the level of the floor or roof.

(d) Method of Anchorage. Anchorage shall not be accomplished by use of toe nails or nails subject to withdrawal. Wood members (including ledgers) shall not be used in cross-grain tension or cross-grain bending.

(e) Required Analysis.

- (1) General. Except as modified herein, the analysis and design relating to the structural alteration of existing buildings not meeting the minimum standards for seismic resistance established by this ordinance shall be in accordance with the analysis specified in Chapter 23 of the Uniform Building Code.
- (2) Continuous Stress Path. A complete, continuous stress path from every part or portion of the building to the ground shall be provided for the required horizontal forces.
- (3) Positive Connections. All parts, portions or elements of the building shall be interconnected by positive means.

(f) Analysis Procedure.

- (1) General. Stresses in materials and existing construction utilized to transfer seismic forces from the ground to parts or portions of the building shall conform to those permitted by the Uniform Building Code and those materials and types of construction specified in Section 3.02.

- (2) Connections. Materials and connectors used for interconnection of parts and portions of the building shall conform to the Uniform Building Code. Nails may be used as part of an approved connector.
- (3) Unreinforced Masonry Walls. Except as modified herein, unreinforced masonry walls shall be analyzed as specified in Uniform Building Code Section 2406, 2407 and 2408 to withstand all vertical loads as specified in Chapter 23 of the Uniform Building Code in addition to the seismic forces required by this ordinance. The 50 percent increase in the seismic force factor for shear walls as specified in Section 2407(h)4F of the Uniform Building Code may be omitted in the computation of seismic loads to existing shear walls. No allowable tension stress will be permitted in unreinforced masonry walls. Walls not capable of resisting the required design forces specified in this ordinance shall be strengthened or shall be removed and replaced.
- (4) Unreinforced Masonry Infill Walls. Unreinforced masonry infill walls shall be analyzed for both in-plane and out-of-plane seismic forces per subsection (f)(3) above. Infill walls not capable of resisting the required design forces shall be strengthened or shall be removed and replaced. If infill walls are removed, the space frame shall be capable of resisting 100 percent of the required design loads per Section 3.01(a) alone, or shall be strengthened.

EXCEPTION: Frame and Masonry Infill in Combination. If the stiffness of the frame alone under 2.25 times the required design loads per Section 3.01(a) results in an elastic deflection of no more than 1/360 times the story height, infill walls may be designed to resist out-of-plane loads only. The strength of the space frame shall be sufficient to resist 3/4 of the required design loads per Section 3.01(a). The frame may be strengthened and stiffened by bracing to achieve these requirements.

(g) Combination of Vertical and Seismic Forces.

- (1) New Materials. All new materials introduced into the building to meet the requirements of this section which are subjected to combined vertical and horizontal forces shall comply with Section 2303(f) of the Uniform Building Code.

- (2) Existing Materials. When stresses in existing lateral force resisting masonry elements are due to a combination of dead loads plus live loads plus seismic loads, the allowable working stress specified in the Uniform Building Code may be increased 100 percent. However, no increase will be permitted in the stresses allowed in Section 3.02, and the stresses in members due only to seismic and dead loads shall not exceed the values permitted by Section 2303(d) of the Uniform Building Code.
- (3) Allowable Reduction of Bending Stress by Vertical Load. In calculating tensile fiber stress due to seismic forces required by this section, the maximum tensile fiber stress may be reduced by the full direct stress due to vertical dead loads. However, no net tensile stress will be permitted in unreinforced masonry walls.

SECTION 3.02 MATERIALS OF CONSTRUCTION.

(a) General. All materials permitted by the Uniform Building Code including their appropriate allowable stresses and those existing configurations of materials specified herein may be utilized to meet the requirements of this ordinance.

(b) Existing Materials.

- (1) Unreinforced Masonry Walls. Unreinforced masonry walls analyzed in accordance with this ordinance may provide vertical support for roof and floor construction and resistance to lateral loads. The facing and backing of such walls shall be bonded so that not less than four (4) percent of the exposed face area is composed of solid headers extending not less than four (4) inches into the backing. The distance between adjacent full-length headers shall not exceed 24 inches vertically or horizontally. Where the backing consists of two or more wythes the header shall extend not less than four (4) inches into the most distant wythe, or the backing wythes shall be bonded together with separate headers whose area and spacing conform to the foregoing.

Tension stresses due to seismic forces normal to the wall may be neglected if the walls do not exceed the height to thickness ratio in Table 2

of this ordinance and the in-plane shear stresses due to seismic loads as set forth in Table 5 of this ordinance. If the wall height-thickness ratio exceeds the specified limits, the wall may be supported by vertical bracing members designed in accordance with Section 3.01. The deflection of such bracing member at design loads shall not exceed one-tenth of the wall thickness.

EXCEPTION: The wall may be supported by flexible vertical bracing members designed in accordance with Section 3.02(b) if the deflection at design loads is not less than one-quarter nor more than one-third of the wall thickness.

All vertical bracing members shall be attached to the floor and roof construction for their design loads independently of required wall anchors. Horizontal spacing of vertical bracing members shall not exceed one-half the unsupported height of the wall nor ten feet. The wall height may be measured vertically to bracing elements other than a floor or roof. Spacing of the bracing elements and wall anchors shall not exceed six feet. Bracing elements shall be detailed to minimize the horizontal displacement of the wall by components of vertical displacements of the floor or roof.

(2) Existing Roof, Floors, Walls, Footings, and Wood Framing. Existing materials including wood shear walls utilized in the described configuration may be used as part of the lateral load resisting system, provided that the stresses in these materials do not exceed the values shown in Table 3 of this ordinance.

(c) Strengthening of Existing Materials. New materials including wood shear walls may be utilized to strengthen portions of the existing seismic resisting system in the described configurations provided that the stresses do not exceed the values shown in Table 4 of this ordinance.

(d) Alternative Materials. Alternative materials, designs and methods of construction may be approved by the Building Official in accordance with the provisions of the Uniform Building Code.

(e) Minimum Acceptable Quality of Existing Unreinforced Masonry Walls.

- (1) General Provisions. All unreinforced masonry walls utilized to carry vertical loads and seismic forces parallel and perpendicular to the wall plane shall be tested as specified in this subsection. All masonry quality shall equal or exceed the minimum standards established herein or shall be removed and replaced by new materials. Alternate methods of testing may be approved by the Building Official. The quality of mortar in all masonry walls shall be determined by performing in-place shear tests or by testing eight-inch diameter cores. Nothing shall prevent pointing with mortar of all the masonry wall joints before the tests are first made. Prior to any pointing, the mortar joints must be raked and cleaned to remove loose and deteriorated mortar. Mortar for pointing shall be Type S or N except that masonry cements shall not be used. All preparation and mortar pointing shall be done under the continuous inspection of the Building Official or a designated building inspector. At the conclusion of the inspection, the inspector shall submit a written report to the licensed engineer or architect responsible for the seismic analysis of the building setting forth the result of the work inspected. Such report shall be submitted to the Building Official for approval as part of the structural analysis. All testing shall be performed in accordance with the requirements specified in this subsection by a testing agency approved by the Building Official. An accurate record shall be kept of all such tests and of their locations in the building, and these results shall be submitted to the Building Official for approval as part of the structural analysis.

- (2) Number and Location of Tests. The minimum number of tests shall be two per wall or line of wall elements resisting a common force, or 1 per 1500 square feet of wall surface, with a minimum of eight tests in any case. The exact test or core location shall be determined at the building site by the licensed engineer or architect responsible for the seismic analysis of the subject building.

- (3) In-Place Shear Tests. The bed joints of the outer wythe of the masonry shall be tested in shear by laterally displacing a single brick relative to the adjacent bricks in that wythe. The opposite head joint of the brick to be tested shall be removed and cleaned prior to testing. The minimum quality mortar in 80 percent of the shear tests shall not be less than the total of 30 psi plus axial stress in the wall at the point of the test. The shear stress shall be based on the gross area of both bed joints and shall be that at which movement of the brick is first observed.
- (4) Core Tests. A minimum number of mortar test specimens equal to the number of required cores shall be prepared from the cores and tested as specified herein. The mortar joint of the outer wythe of the masonry core shall be tested in shear by placing the circular core section in a compression testing machine with the mortar bed joint rotated 15 degrees from the axis of the applied load. The mortar joint tested in shear shall have an average ultimate stress of 20 psi based on the gross area. The average shall be obtained from the total number of cores made. If test specimens cannot be made from cores taken, then the shear value shall be reported as zero.

(f) Testing of Shear Bolts. One-fourth of all new shear bolts and dowels embedded in masonry walls shall be tested by a special inspector using a torque calibrated wrench to the following minimum torques:

- 1/2" diameter bolts or dowels = 40 foot-lbs.
- 5/8" diameter bolts or dowels = 50 foot-lbs.
- 3/4" diameter bolts or dowels = 60 foot-lbs.

No bolts exceeding 3/4" shall be used. All bolt heads and nuts shall be installed over malleable iron or plate washers when bearing on wood and heavy cut washers when bearing on steel.

(g) Determination of Allowable Stresses for Design Methods Based on Test Results.

- (1) Design Shear Values. Design seismic in-plane shear stresses shall be substantiated by tests performed as specified in subsection (e) (3) and (4), above.

Design stresses shall be related to test results obtained in accordance with Table 5 of this ordinance. Intermediate values between 5 and 10 psi may be interpolated.

(2) Design Compression and Tension Values.

Compression stresses for unreinforced masonry having a minimum design shear value of 3 psi shall not exceed 100 psi. Design tension values for unreinforced masonry shall not be permitted.

(h) Five percent of the existing rod anchors utilized as all or part of the required wall anchors shall be tested in pullout by an approved testing laboratory. The minimum number tested shall be four per floor, with two tests at walls with joists framing into the wall and two tests at walls with joists parallel to the wall. The test apparatus shall be supported on the masonry wall at a minimum distance of the wall thickness from the anchor tested. The rod anchor shall be given a preload of 300 lbs. prior to establishing a datum for recording elongation. The tension test load reported shall be recorded at one-eighth inch relative movement of the anchor and the adjacent masonry surface. Results of all tests shall be reported. The report shall include the test results as related to the wall thickness and joist orientation. The allowable resistance value of the existing anchors shall be 40 percent of the average of those tested anchors having the same wall thickness and joist orientation.

(i) Qualification tests for devices used for wall anchorage shall be tested with the entire tension load carried on the enlarged head at the exterior face of the wall. Bond on the part of the device between the enlarged head and the interior wall face shall be eliminated for the qualification tests. The resistance value assigned the device shall be 20 percent of the average of the ultimate loads.

SECTION 3.03 INFORMATION REQUIRED ON PLANS.

(a) General. In addition to the seismic analysis required elsewhere in this ordinance, the licensed engineer responsible for the seismic analysis of the building shall determine and record the information required by this section on the approved plans.

(b) Construction Details. The following requirements with appropriate construction details shall be made part of the approved plans:

- (1) All reinforced masonry walls shall be anchored at the roof level by tension bolts through the

wall as specified in Table 4 of this ordinance or by approved equivalent at a maximum anchor spacing of six feet. All unreinforced masonry walls shall be anchored at all floors with tension bolts through the wall or by existing rod anchors at the maximum anchor spacing of six feet. All existing rod anchors shall be secured to the joists to develop the required forces. The Building Official may require testing to verify the adequacy of the embedded ends of existing rod anchors. Tests when required shall conform to Section 3.02(h). When access to the exterior face of the masonry wall is prevented by proximity of an existing building, wall anchors conforming to Items 5a and 6b in Table 4 of this ordinance may be used.

Alternative devices to be used in lieu of tension bolts for masonry wall anchorage shall be tested as specified in Section 3.02.

- (2) Diaphragm chord stresses of horizontal diaphragms shall be developed in existing materials or by addition of new materials.
- (3) Where trusses and beams other than rafters or joists are supported on masonry, ledgers or columns shall be installed to support vertical loads of the roof or floor members.
- (4) Parapets and exterior wall appendages not capable of resisting the forces specified in this ordinance shall be removed, stabilized or braced to ensure that the parapets and appendages remain in their original position.
- (5) All deteriorated mortar joints in unreinforced masonry walls shall be pointed with Type S or N mortar (Masonry cements shall not be used). Prior to any pointing, the wall surface must be raked and cleaned to remove loose and deteriorated mortar. All preparation and pointing shall be done under the continuous inspection of a special inspector certified to inspect masonry or concrete. At the conclusion of the project, the inspector shall submit a written report to the Building Official setting forth the portion of work inspected.

- (6) Repair details shall be prepared for any cracked or damaged unreinforced masonry wall required to resist forces specified in this plan.

(c) Existing Construction. The following existing construction information shall be made a part of the approved plans:

- (1) The type and dimensions of existing walls and the size and spacing of floor and roof members.
- (2) The extent and type of existing wall anchorage to floors and roofs.
- (3) The extent and type of parapet corrections, if any, which were performed in accordance with the Uniform Building Code.
- (4) Accurately dimensioned floor plans and masonry wall elevations showing dimensioned openings, piers, wall thickness and heights.
- (5) The location of cracks or damaged portions of unreinforced masonry walls requiring repairs.
- (6) The type of interior wall surfaces and whether reinstalling or anchoring of ceiling plaster is necessary.
- (7) The general condition of the mortar joints and whether the joints need pointing.

TABLE 1

HORIZONTAL FORCE FACTOR "Cp" FOR
ELEMENTS OF STRUCTURES

PART OR PORTION - BUILDINGS	DIRECTION OF FORCE	VALUE of Cp
1. Exterior bearing and nonbearing walls, interior bearing walls and partitions, interior nonbearing walls and partitions over 10 feet in height, masonry or concrete fences over 6 feet in height.	Normal to flat surface	.2
2. Cantilever parapet	Normal to flat surface	.8
3. Exterior and interior ornamentations and appendages.	Any direction	.8

TABLE 2

ALLOWABLE VALUE OF HEIGHT-THICKNESS RATIO
OF UNREINFORCED MASONRY WALLS WITH MINIMUM
QUALITY MORTAR. (1)

	BUILDINGS WITH CROSSWALLS AS DEFINED BY SECTION 2.02	ALL OTHER BUILDINGS
Walls of One Story Buildings	16	13
First Story Wall of Multi-Story Buildings	16	15
Walls in Top Story of Multi-Story Buildings	14	9
All Other Walls	16	13

(1) Minimum quality mortar shall be determined by laboratory testing in accordance with Section 3.02(e).

TABLE 3

VALUES FOR EXISTING MATERIALS

1. Horizontal Diaphragms	
a. Roofs with straight sheathing with the roof covering applied directly to the sheathing.	100 pounds per foot for seismic shear
b. Roofs with diagonal sheathing with the roof covering applied directly to the sheathing.	400 pounds per foot for seismic shear
c. Floors with straight tongue and groove sheathing.	150 pounds per foot for seismic shear
d. Floors with straight sheathing and finished wood flooring.	300 pounds per foot for seismic shear
e. Floors with diagonal sheathing and finished wood flooring.	450 pounds per foot for seismic shear
f. Floors or roofs with straight sheathing and plaster applied to the values for items 1-a and 1-c joist or rafters. ²	Add 50 pounds per foot to the allowable
2. Shear Walls	
Wood stud walls with lath and plaster	100 pounds per foot each side for seismic shear.
3. Plain Concrete Footings	
	$f_c = 1500$ psi unless otherwise shown by tests.
4. Douglas Fir Wood	
	Allowable stress same as No. 1 D.F. 3
5. Reinforcing Steel	
	$f_s = 18,000$ psi maximum
6. Structural Steel	
	$f_s = 20,000$ psi maximum

¹Material must be sound and in good condition.

²Wood lath and plaster must be reattached to existing joists or rafters in a manner approved by the Building Official.

³Stresses given may be increased for combinations of loads as specified in Section 3.01.

TABLE 4

**ALLOWABLE VALUES OF NEW MATERIALS USED
IN CONJUNCTION WITH EXISTING CONSTRUCTION**

NEW MATERIALS OR CONFIGURATION OF MATERIALS	ALLOWABLE VALUES
<p>1. Horizontal Diaphragms Plywood sheathing applied directly over existing straight sheathing with ends of plywood sheets bearing on joists or rafters and edges of plywood located on center of individual sheathing boards.</p>	<p>Same as specified in Table No. 25-J of the Building Code for blocked diaphragms.</p>
<p>2. Shear Walls</p> <p>a. Plywood sheathing applied directly over existing wood studs. (No value shall be given to plywood applied over existing plaster or wood sheathing.)</p> <p>b. Dry wall or plaster applied directly over existing wood studs.</p> <p>c. Dry wall or plaster applied to plywood sheathing over existing wood studs.</p>	<p>Same as values specified in Table No. 25-K of the Building Code for shear walls.</p> <p>75 percent of the specified in Table No. 47-I of the Building Code.</p> <p>33 1/3 percent of the values specified in Table No. 47-I of the Building Code.</p>
<p>3. Shear Bolts Shear bolts and shear dowels embedded a minimum of 8 inches into unreinforced masonry walls. Bolt centered in a 2 1/2-inch-diameter hole with dry-pack or nonshrink grout around circumference of bolt or dowel.¹</p>	<p>100 percent of the values for plain masonry specified in Table No. 24-G of the Building Code. No values larger than those given for 3/4-inch-diameter bolts shall be used.</p>
<p>4. Tension Bolts Tension bolts and tension dowels extending entirely through unreinforced masonry walls secured with bearing plates on far side of wall with at least 30 square inches of area.²</p>	<p>1200 pounds per bolt or dowel</p>
<p>5. Wall Anchors [Sec. 106 (b)]</p> <p>a. Bolts extending to the exterior face of the wall with a 2 1/2-inch round plate under the head. Install as specified for shear bolts. Spaced not closer than 12 inches on centers.^{1 2}</p> <p>b. Bolts or dowels extending to the exterior face of the wall with a 2 1/2-inch round plate under the head and drill at an angle of 22 1/2 degrees to the horizontal. Installed as specified for shear bolts.²</p>	<p>600 pounds per bolt.</p> <p>1200 pounds per bolt or dowel.</p>

TABLE 4 (CONT'D)

ALLOWABLE VALUES OF NEW MATERIALS USED
IN CONJUNCTION WITH EXISTING CONSTRUCTION -- (Continued)

NEW MATERIALS OR CONFIGURATION OF MATERIALS	ALLOWABLE VALUES
<p>6. Infilled Walls Reinforced masonry infilled openings in existing unreinforced masonry walls with keys or dowels to match reinforcing.</p>	Same as values specified for unreinforced masonry walls.
<p>7. Reinforced Masonry Masonry piers and walls reinforced as specified in Chapter 24 of the Building Code.</p>	Same as values specified in Table No. 24-B of the Building Code.
<p>8. Reinforced Concrete Concrete footings, walls and piers reinforced as specified in Chapter 26 and designed for tributary loads.</p>	Same as values specified in Chapter 26 of the Building Code.
<p>9. Existing Foundation Loads Foundation loads for structures exhibiting no evidence of settlement.</p>	Calculated existing foundation loads due to maximum dead load plus live load may be increased 25 percent dead load, and may be increased 50 percent for dead load plus seismic load required by this chapter.

1Bolts and dowels to be tested as specified in Section 3.02.

2Bolts and dowels to be 1/2-inch minimum in diameter.

TABLE 5

ALLOWABLE SHEAR STRESS FOR TESTED
UNREINFORCED MASONRY WALLS

SHEAR TESTS		
Eighty percent of test results in psi not less than:	Average test results of cores in psi	Seismic in-plane shear in psi based on gross area ¹
30 plus axial stress	20	3
40 plus axial stress	27	4
50 plus axial stress	33	5
100 plus axial stress or more	67 or more	10 (maximum)

1Allowable shear stress may be increased by addition of 10 percent of the axial stress due to the weight of the wall directly above.

TABLE 6

GLOSSARY OF SYMBOLS AND NOTATIONS*

- Cp = Numerical coefficient as specified in Section 2312(g) and as set forth in Table No. 23-J
- Fp = Lateral forces on a part of the structure and in the direction under consideration
- V = The total lateral force or shear at the base
- W = The total dead load as defined in Section 2302 including the partition loading specified in Section 2304(d) where applicable
- W_p = The weight of a portion of a structure or nonstructural component

*Unless otherwise specified, Section and Table references in this table are to the Uniform Building Code.

Section II. In accordance with the provisions of Section 620 of the City Charter, this ordinance shall become effective 30 days from and after the date of its adoption.

INTRODUCED at a regular meeting of the City Council of the City of Hayward, held the 16th day of October, 1990, by Councilmember RANDALL.

ADOPTED at a regular meeting of the City Council of the City of Hayward, held the 13th day of November, 1990, by the following vote of members of said City Council.

AYES: COUNCILMEMBER Aragon, Campbell, Cooper, Randall, Ward
MAYOR Sweeney

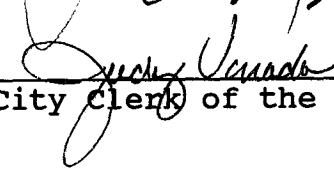
NOES: NONE

ABSENT: NONE

ABSTAIN: COUNCILMEMBER Jimenez

APPROVED: November 13, 1990

BY: 
Mayor of the City of Hayward

ATTEST: 
City Clerk of the City of Hayward

The Daily Review

116 W. Winton Ave., Hayward, CA 94544
415) 783-6111

LEGAL NO. _____ 5381

RECEIVED
HAYWARD
CITY CLERK

Nov 13 10 35 AM '90

Sec. 1.
A new ordinance is hereby enacted to read as follows:

Sec. 1.00 Findings and Declaration of Public Purpose

Sec. 2.00 Purpose

Sec. 2.01 Scope

a. General

b. Provisions Also Covered by Code

c. Definitions

d. Application

e. Enforcement

f. Analysis

1. Forces

1. New Materials

2. Existing Materials

3. Allowable Reduction

g. Designation of Seismic Zones

h. Values

a. General

b. Seismic

SUPERIOR COURT OF THE STATE OF CALIFORNIA
IN AND FOR THE COUNTY OF ALAMEDA

AFFIDAVIT OF PUBLICATION

Case No

In the matter of
.....AN ORDINANCE ESTABLISHING.....
.....MINIMUM EARTHQUAKE HAZARD.....
.....REDUCTION STANDARDS IN.....
.....EXISTING UNREINFORCED MASONRY.....
.....WALL BUILDINGS.....

.....Cheryl Poon.....deposes and
says that he/she was the Public Notice Advertising Clerk of
THE DAILY REVIEW a newspaper of general circulation as
defined by Government Code Section 6000, adjudicated as
such by the Superior Court of the State of California,
County of Alameda (Order Nos. 224 933 and 244 264)
which is published and circulated in Eden Township in said
county and state seven days a week.

That the PUBLIC NOTICE.....

of which the annexed is a printed copy, was published in
every issue of THE DAILY REVIEW on the following dates:
NOVEMBER 10, 1990

I certify (or declare) under penalty of perjury that the
foregoing is true and correct.
Date NOVEMBER 10, 1990
at Hayward, California.

Cheryl Poon
Public Notice Advertising Clerk

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117

