OFFICE OF THE CITY CLERK

2011 JUL 11 PM 2:45

INTRODUCED BY

COUNCILMEMBER

REVISED

APPROVED FOR FORM AND LEGALITY

DEPUTY CITY ATTORNEY

OAKLAND CITY COUNCIL

Ordinance No. _____ C.M.S.

ORDINANCE ADOPTING OAKLAND MUNICIPAL CODE CHAPTER 15.30 TO ESTABLISH A VOLUNTARY SEISMIC STRENGTHENING REIMBURSEMENT INCENTIVE PROGRAM FOR RESIDENTIAL BUILDINGS AND AMENDING THE MASTER FEE SCHEDULE TO ESTABLISH A VOLUNTARY SEISMIC STRENGTHENING PERMIT FEE

WHEREAS, the United States Geological Service has forecasted with a probability of sixty-two percent (62%) that a magnitude 6.7 (Richter scale) or larger seismic event will occur along an earthquake fault in the San Francisco Bay Area before the year 2032; and

WHEREAS, an earthquake of this magnitude would cause social and economic disruption in the San Francisco Bay Area equal to or greater than the 1989 Loma Prieta earthquake (magnitude 6.9); and

WHEREAS, an earthquake of this magnitude would cause an estimated tens of billions of dollars of economic loss in the San Francisco Bay Area, half of which would be loss in damaged residences; and

WHEREAS, an earthquake of this magnitude would cause an estimated 36,000 uninhabitable housing units in Oakland, which is approximately one-third of Oakland's existing housing stock; and

WHEREAS, enhancing the structural resistance of wood-framed, one- and two-story, one- and two-family residential buildings (Group R, Division 3 occupancy) to seismically induced lateral loads through a minimal level of strengthening would provide Oakland property owners, financial lenders, property insurers, and residents an additional margin of safety against detrimental damage during and following an earthquake of this magnitude; and

WHEREAS, an estimated eighty-five percent (85%) of Oakland's existing residential buildings constructed before modern earthquake codes were adopted have not been even minimally strengthened for seismic-induced lateral loads; and

WHEREAS, the average construction cost for installing seismic strengthening based on a non-prescriptive engineered design for existing residential buildings that braces cripple walls and fastens sill plates to the foundation is estimated between $7,000 and $30,000; and

WHEREAS, there is an immediate need to develop a low-cost seismic strengthening prescriptive (non-engineered) design for residential buildings that provides a minimum level of life-safety performance for property owners, financial lenders, insurers, and residents; and

WHEREAS, the current edition of the California Building Code does not provide a prescriptive design method to strengthen residential buildings with unbraced cripple walls and unfastened foundation sill plates to resist earthquakes; and

WHEREAS, a low-cost prescriptive design for minimally strengthening unbraced cripple walls and unfastened sill plates has been developed by a committee representing the East Bay, Peninsula, and Monterey Bay Chapters of the International Code Council (ICC) with additional committee representation by other governmental organizations that have been approved by the three chapters of ICC, the Association of Bay Area Governments (ABAG), the California Building Officials (CALBO), the Structural Engineers Association of Northern California, and the Earthquake Engineering Research Institute of Northern California; and

WHEREAS, establishing financial incentives for property owners to strengthen existing residential dwellings with unbraced cripple walls and unfastened sill plates either with a non-prescriptive (engineered) design or a prescriptive design would significantly reduce the risk of damage to buildings and injury to the occupants and general public during and after an earthquake of this magnitude; and

WHEREAS, establishing determinate permit fees for the installation of seismic strengthening methods would expand the financial incentives for property owners to retrofit existing residential buildings and enhance the opportunities for the public to benefit from a reduction of the seismic hazard to the housing stock in Oakland; now, therefore,

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

SECTION 1. Oakland Municipal Code Amendment

A new chapter 15.30 within Title 15, Buildings and Construction, of the Oakland Municipal Code is hereby adopted as follows:

Chapter 15.30

Article I - Scope

Section 15.30.010 Title

This chapter shall be known as "Voluntary Seismic Strengthening For Residential Buildings".

Section 15.30.020 Intent

This chapter is intended to promote public safety and welfare and safeguard life and limb, health, and property through a voluntary program for structurally strengthening the portions of wood framed residential buildings that are most vulnerable to earthquake damage. The prescriptive

structural strengthening standards set forth herein will reduce the risk of seismically-induced damage by improving the structural resistance of these buildings.

This chapter is not intended to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms set forth herein, and these standards are not intended to endorse, authorize, or approve any prior work accomplished without required permits, inspections, fees, or final approvals.

Section 15.30.030 Purpose

A. Prescriptive Design

1. This chapter establishes voluntary prescriptive design standards for the structural strengthening of underfloor enclosures to resist seismic loads without requiring plans or calculations prepared by a registered design professional or in accordance with the Oakland Building Construction Code. Sufficient documentation shall be submitted to accurately establish existing conditions. When the Building Official determines that existing conditions are beyond the scope of these prescriptive standards, an engineering analysis prepared by a registered design professional shall be submitted.
2. Alternate details and methods equivalent to or exceeding the prescriptive design standards in this chapter are permitted when approved by the Building Official. Sufficient documentation shall be submitted to substantiate such equivalence.

B. Non-Prescriptive Design

1. This chapter also allows voluntary non-prescriptive designs equivalent to or exceeding the prescriptive design standards in this chapter. Seismic strengthening calculations, plans, and specifications for associated permits shall be prepared by registered design professionals. Analysis and documentation with respect to lateral strength, deflection, and soil capacity shall be in accordance with the Oakland Building Construction Code and approved by the Building Official.

2. Non-prescriptive designs for strengthening structural weaknesses set forth in Sections 15.30.200.A.1 through A.4 (inclusive) may incorporate the prescriptive design standards set forth in the Oakland Building Construction Code when approved by the Building Official.

Section 15.30.040 Application

A. Exclusions

This chapter shall apply solely to existing, wood-framed, one- and two-story residential buildings classified either as a Group R, Division 3 occupancy or as a Group R, Division 3 occupancy with an attached Group U, Division 1 occupancy. The prescriptive design standards in this chapter shall not apply to buildings, or portions thereof, with any of the following structural elements or features:

1. Lateral force resisting system using or containing poles or columns embedded in the ground.

2. Cripple wall height exceeding 4-feet, as measured vertically at any point.
3. Building exceeding 2-stories in height or exceeding 3,000 square feet of combined floor area for a 2-story building or exceeding 2,000 square feet of floor area for a 1-story building, as defined in the Oakland Building Construction Code.
4. Building erected on a concrete slab-on-grade.
5. Building erected on or into sloping ground with a surface gradient steeper than 3-units horizontally to 1-unit vertically, as measured at any point.
6. Clay or concrete roof tiles with mortared edges.
7. Building framing other than wood.
8. Brick or stone veneer height exceeding 4-feet, as measured vertically at any point.

B. Historic Buildings

Residential buildings that have been qualified as historic shall be permitted to use alternate building regulations, as set forth in the State Historical Building Code, to preserve their original or restored architectural elements and features.

Section 15.30.050 Amendments

Where any section, subsection, sentence, clause, phrase, or other part of the Oakland Building Construction Code recited in this chapter is amended subsequently, all provision of the original section not so specifically amended shall remain in full force and effect and all amended provisions shall be considered as added thereto.

Article II - Administrative

Section 15.30.100 Definitions

As used in this chapter, the following terms shall have the meanings set forth hereto:

Adhesive Anchor is an approved proprietary fastener placed in hardened concrete or masonry that derives its holding strength from a chemical adhesive compound placed between the wall of the hole and the embedded portion of the anchor.

Anchor Side Plate is an approved proprietary metal plate or plates used to connect a wood sill plate to the side of a concrete or masonry foundation.

Assembled Masonry includes adobe, burned clay, concrete or sand-lime brink, hollow clay or concrete block, hollow clay tile, rubble, cut stone, and unburned clay masonry in which the area of reinforcement is less that fifty percent (50%) of the minimum steel ratios required for reinforced masonry by the Oakland Building Construction.

Building Official is the Building Official of the City of Oakland, as identified in the Oakland Building Construction Code, or his or her designee, and successors in title.

City is the City of Oakland, a municipal corporation.

City Administrator is the City Administrator of the City of Oakland or his or her designee, and successors in title.

Cripple Wall is a wood-framed wall extending from the top of the perimeter foundation to the underside of the lowest floor framing.

Expansion Anchor is an approved proprietary mechanical fastener placed in hardened concrete or masonry that is designed to expand in a self-drilled or pre-drilled hole of a specified diameter and depth and engage the sides of the hole in one or more locations to develop shear and/ or tension resistance to applied loads without grout or chemical adhesive.

Group R, Division 3 occupancy is a one- or two-family residence, as defined and used in the Oakland Building Construction Code.

Group U, Division 1 occupancy is a private garage, as defined and used in the Oakland Building Construction Code.

Non-Prescriptive (Engineered) Design is a seismic strengthening method that is prepared under the responsible charge of a registered design professional in accordance with the Oakland Building Construction Code.

Oakland Building Construction Code is the most current edition of the California Building Code with amendments adopted by the City of Oakland, as set forth in Oakland Municipal Code, Title 15, Chapter 15.04, and successors in title.

Perimeter Foundation is a foundation system that is located beneath and provides support for the exterior walls of a building or structure.

Purchaser is an individual, group of individuals, limited partnership, limited liability company, corporation, or other entity who by recorded instrument acquires title through assignment, transfer, or other conveyance to real property located within the corporate limits of the City of Oakland that has been previously improved with a residential building.

Registered Design Professional is an architect or engineer possessing a valid license issued by the State of California to perform civil, structural, soil, or geotechnical related design, material classification and analysis, and structural observation.

Residential Building is a habitable structure for which a Certificate of Occupancy has not been revoked that is classified by the Building Official solely as a Group R, Division 3 occupancy or as a Group R, Division 3 occupancy with an attached Group U, Division 1 occupancy.

Seismic Strengthening is an approved improvement of the lateral force resisting system of the structure by an alteration of existing or addition of new structural elements.

Supplemental Connector is an approved proprietary metal framing connection.

Unreinforced Concrete is concrete in which the area of reinforcement is less that fifty percent (50%) of the minimum steel ratios required for reinforced concrete by the Oakland Building Construction.

Section 15.30.110 Rule, Regulations, and Interpretations

A. The Building Official may adopt administrative rules and regulations as required to implement this chapter and may make non-administrative interpretations as required to achieve the purposes of this chapter.

B. The City Administrator may adopt administrative rules and regulations as required to implement the financial incentives of this chapter.

Article III – Non-Administrative

Section 15.30.200 Structural Weaknesses

A. Structural weaknesses shall include the following:

1. Sill plates or floor framing supported directly on the ground without an approved foundation system.
2. Perimeter foundation constructed of wood posts supported by isolated footings.
3. Perimeter foundation that is not continuous.

   Exception: existing porches, storage rooms, and similar spaces that do not contain fuel-burning appliances.
4. Perimeter foundation constructed of unreinforced concrete or assembled masonry.
5. Sill plates not connected to the foundation in accordance with this chapter.
6. Cripple walls not braced in accordance with this chapter.

B. A separate permit for strengthening structural weaknesses set forth in Sections 15.30.200.A.1 through A.4 (inclusive) shall be required as a condition of issuance of a permit for strengthening structural weaknesses set forth in Sections 15.30.200.A.5 and A.6.

Section 15.30.210 Seismic Strengthening - General

A. Scope

1. Residential buildings may be seismically strengthened by newly installed construction and alteration of existing construction. Alternate prescriptive and non-prescriptive designs shall be equivalent to or exceed the performance levels of this chapter and be approved by the Building Official.

2. Alternative prescriptive designs with provisions for voluntary seismic retrofitting of wood-framed cripple walls have been developed by a committee representing the East Bay, Peninsula, and Monterey Bay Chapters of the International Code Council (ICC) with additional committee representation by other governmental organizations. Alternative prescriptive designs include those that were approved by the three chapters of ICC, the Association Of Bay Area Governments (ABAG), the California Building Officials (CALBO), the Structural Engineers Association of Northern California, and the Earthquake Engineering Research Institute of Northern California in October 2004, with later amendments, and are considered equivalent to this chapter.

B. Wood Materials

1. Wood materials that are part of the seismic strengthening system shall be free of defects which substantially reduce the structural capacity of the member. Wood material that is infested with or damaged by fungus or insects shall be replaced with new material that provides an equivalent original dimension and structural capacity of the existing member. Newly installed material in contact with concrete or masonry shall be approved preservative treated wood or foundation-grade redwood in accordance with the Oakland Building Construction Code.
2. Fasteners, anchors, washers, plates, connectors, and similar metal attachments shall be corrosion resistant metal and shall not be detrimentally affected by wood preservative coatings or impregnations in accordance with the Oakland Building Construction Code. Installed fasteners shall not split wood members.

Section 15.30.220 Seismic Strengthening - Quality Control

A. Permits, Inspections, and Fees

Applications, fees, permits, and inspection approvals shall be required for seismic strengthening and shall be in accordance with the Oakland Building Construction Code and the Master Fee Schedule.

B. Special Inspection

Special inspection for a prescriptive design shall not be required, unless otherwise determined to be necessary by the Building Official. Special inspection for a non-prescriptive design shall be in accordance with the Oakland Building Construction Code and the requirements of the registered design professional in responsible charge of the work.

C. Structural Observation

Structural observation shall not be required for a prescriptive design. Structural observation for a non-prescriptive design shall be in accordance with the Oakland Building Construction Code.

Section 15.30.230 Prescriptive Design - Framing

A. Floor Joists - End Bearing

End bearing of floor joists shall be restrained by a continuous rim joist (2-inch nominal thickness), or tightly-fitting, full-depth, lumber blocking (2-inch nominal thickness) or exterior grade structural wood panel sheathing (1-inch minimum thickness). Bottom edge fasteners for rim joists and perimeter edge fasteners for blocking and sheathing shall be either 8d common angled ("toe") nails spaced apart 4-inches or equivalent supplemental connectors. Foundation blocking or sheathing shall be installed between alternate floor joists. Cripple wall blocking or sheathing shall be installed between each floor joist, except for obstructions (piping, underfloor ventilation and access, conduits, ducts, etc.). The perimeter of supplemental blocking shall be fastened to adjoining members.

B. Floor Joists - Parallel Span

Floor joists that are parallel to a perimeter foundation shall have a parallel rim joist fully supported by the foundation sill plate or cripple wall top plate. Bottom edge fasteners for rim joists shall be either 8d angled ("toe") nails spaced apart 4-inches or equivalent supplemental connectors.

Section 15.30.240 Prescriptive Design - Foundations

A. Construction

Foundations shall be constructed in accordance with the Oakland Building Construction Code. Soil investigations or geotechnical studies shall not be required unless the building has structural distress from soil movement.

B. Analysis

1. Foundations with structural weaknesses set forth in Sections 15.30.200.A.1 and 15.30.200.A.2 shall be replaced with a continuous perimeter foundation.
2. Foundations with structural weaknesses set forth in Sections 15.30.200.A.3 and 15.30.200.A.4 shall be either
   a. replaced with a continuous perimeter foundation, or
   b. analyzed for structural adequacy by a registered design professional for force levels determined by the formula

$$V = 0.1375\,W$$, where V = base shear and W = tributary weight,

   and approved by the Building Official. Test reports to determine existing foundation material strengths, quality, and condition shall be submitted for review.

Section 15.30.250 Prescriptive Design - Sill Plates

A. Connection

Sill plates shall be connected to foundations in accordance with the Oakland Building Construction Code, or as otherwise approved by the Building Official. Anchors within braced panels of cripple walls shall be spaced apart not more than 32-inches (2-anchors minimum per continuous sill plate). Sill plates shall be drilled for fasteners used with anchor side plates before installation.

B. Anchors

Adhesive and expansion anchors shall be installed with a metal plate washer between the nut and the sill plate or supplemental block. Washers shall be 2-inch x 2-inch x 3/16-inch. Expansion anchors shall not be used in assembled masonry or unreinforced concrete foundations. Adhesive anchors shall be used where expansion anchors cause surface cracking of the foundation or cannot be tightened as required by the manufacturer's recommendations. Supplemental blocks for through-anchor installation, when installed, shall be 2-inch nominal thickness lumber and fastened to sill plates with not less than four 10d common nails.

Section 15.30.260 Prescriptive Design - Supplemental Connector

Supplemental connectors that are substituted for a group of individual fasteners shall provide a structural capacity equivalent to or exceeding the combined capacity of the fasteners.

Section 15.30.270 Prescriptive Design - Cripple Walls

A. Bracing

1. Cripple walls shall be braced with exterior grade structural wood panel sheathing not less than 15/32-inch thickness. Plywood sheathing shall be not less than five (5) plies.
2. Sheathing shall be fastened to cripple wall studs, top plate, and sill plate. Fasteners shall be 8d common nails spaced apart not more than 4-inches at sheathing edges and not more than 12-inches at intermediate supports and shall be installed not less than 3/8-inch from sheathing edges.
3. Sheathing horizontal joints shall be continuously supported between studs by full-width and full-depth, 2-inch nominal thickness lumber blocking. Sheathing vertical joints shall continuously supported by stud framing.
4. Supplemental studs ("sistered") shall be full-depth and full-height and fastened to existing studs with 16d common nails spaced apart not more than 8-inches in a vertically staggered pattern (3-nails minimum).
5. Top plates shall be lapped and fastened in accordance with the Oakland Building Construction Code or spliced with an equivalent supplemental connector installed on the sheathing face.
6. Supplemental blocking for sheathing bottom edge-nailing shall be full-width and full-depth between studs, 2x nominal thickness lumber, and fastened to sill plates with 10d common nails spaced apart not more than 6-inches in an alternating pattern (4-nails minimum).
7. Cutouts in sheathing and notches in top plates, sill plates, and existing studs for obstructions (piping, underfloor ventilation and access, ducts, etc.) shall be reinforced with supplemental connectors and approved by the Building Official.

B. Bracing Distribution

1. Braced End-Panels

Cripple walls shall be braced at each end of the wall line, or elsewhere along the wall line when approved by the Building Official. The horizontal length of a braced end-panel shall be not less than 8-feet, measured at any point.

2. Braced Intermediate-Panels

Cripple walls also may be braced with intermediate-panels spaced apart evenly between braced end-panels. The horizontal length of an intermediate-panel shall be not less than 4-feet, measured at any point, and not less than twice the vertical height of the braced panel for buildings with tile roofing or with portland cement plaster or brick or stone veneer exterior building surfaces.

3. **Unbraced Sections**

Cripple walls may have unbraced sections between braced panels. The horizontal length of an unbraced section of wall line shall be

a. not more than 16-feet, measured at any point, for a 1-story building with wood exterior building surfaces, and

b. not more than 12-feet, measured at any point, for a 1-story building with tile roofing or with portland cement plaster or brick or stone veneer exterior building surfaces, and

c. not more than 8-feet, measured at any point, for 2-story buildings with tile roofing or with portland cement plaster or brick or stone veneer exterior building surfaces.

C. Ventilation

1. Underfloor ventilation shall not be reduced.
2. Sheathed stud cavities shall be individually ventilated with 2-inch diameter holes drilled through the bracing sheathing, and centered within the stud cavity, and located not less than 1-inch below the top plate, and 1-inch above the sill plate, and 1-inch above and below horizontal blocking. Cavities with stud height less than 18-inches shall have a single ventilation hole.

Section 15.30.280 Prescriptive Design - Deviations

Substantive deviations from the prescriptive design requirements in this chapter shall be analyzed by a registered design professional and approved by the Building Official. Calculations, plans, and specifications shall be in accordance with the Oakland Building Construction Code.

Article IV – Financial Incentives

Section 15.30.300 Financial Incentives - Qualifications

A. From time to time, the City may provide opportunities for purchasers and current owners of existing residential buildings to apply for financial incentives to voluntarily strengthen their residences against earthquake damage. To qualify, purchasers and current owners shall complete either a prescriptive or non-prescriptive seismic strengthening upgrade in full conformance with the approved design and all conditions of the issued permit.

B. Purchasers and current owners shall not be eligible for financial incentives for work previously completed, with or without required permits, fees, or inspection approvals, which conforms with or exceeds either a prescriptive or non-prescriptive seismic strengthening design. Inspection of residential buildings by the Building Official to confirm the presence or absence of previously installed seismic strengthening and its structural capacity shall be a condition of permit issuance.

Section 15.30.310 Financial Incentives - Program

Financial incentives, as may be available, shall include the following:

A. A determinate permit fee, as established in the Master Fee Schedule.

B. A portion of the real estate transfer tax for a newly purchased residential building, not to exceed one-half of one percent (0.5 %) of the purchase price of the residential building, as verified by the Building Official, or $5,000.00, whichever is the lesser amount.

Section 15.30.320 Financial Incentives - Requirements

A. To qualify for a determinate permit fee incentive, as may be available, the purchaser or current owner shall:

1. Submit a certified copy of the recorded instrument of ownership with a permit application to the Building Official.
2. Within 1-year following approval of the permit application for issuance, receive a Certificate of Completion of the work from the Building Official.
3. Within 30-calendar days following issuance of a Certificate of Completion, submit an instrument approved by the Building Official establishing continuing ownership of the real property.

B. To qualify for a real estate transfer tax incentive, as may be available, the purchaser shall:

1. Within 60-calendar days following recordation by the Alameda County Clerk-Recorder of a transfer of ownership of the real property to the purchaser, submit the following documentation with a complete permit application to the Building Official:
   a. certified copy of the recorded instrument of ownership transfer, and
   b. approved instrument establishing the purchase price of the residential building.
2. Within 1-year following approval of the permit application for issuance, receive a Certificate of Completion of the work from the Building Official.
3. Within 30-calendar days following issuance of a Certificate of Completion, submit an approved instrument to the Building Official establishing continuing ownership of the real property.

SECTION 2. Findings

The recitals contained in this Ordinance are true and correct and are an integral part of the Council's decision, and are hereby adopted as findings.

SECTION 3. Severability

The provisions of this Ordinance are severable, and if any clause, sentence, paragraph, provision, or part of this Ordinance, or the application of this Ordinance to any person, is held to be invalid or preempted by state or federal law, such holding shall not impair or invalidate the remainder of this Ordinance. If any provision of this Ordinance is held to be inapplicable, the provisions of this Ordinance shall nonetheless continue to apply with respect to all other covered development projects and applicants. It is hereby declared to be the legislative intent of the City Council that this Ordinance would have been adopted had such provisions not been included or such persons or circumstances been expressly excluded from its coverage.

SECTION 4. California Environmental Quality Act

The Council of the City of Oakland finds and determines that this Ordinance complies with the California Environmental Quality Act (CEQA), based on the following, each of which provides a separate and independent basis:

1. CEQA Guidelines Section 15061(B)(3); and
2. CEQA Guidelines Section 150301 (existing facilities); and
3. CEQA Guidelines Section 150302 (replacement or reconstruction).

SECTION 5. Master Fee Schedule Amendment

The Master Fee Schedule of the City of Oakland is hereby amended to establish a determinate reduced building permit fee for the voluntary seismic strengthening of applicable residential buildings set forth herein, in the amount of two-hundred fifty dollars ($250.00), or as increased, decreased, or otherwise modified or deleted by subsequent ordinance amending the Master Fee Schedule. Such amendments by ordinance of the Master Fee Schedule shall not also require amendments to this ordinance.

SECTION 6. Effective Date

This Ordinance shall be effective on and after its adoption by sufficient affirmative votes of the Council of the City of Oakland, as provided in the Charter of the City of Oakland, Section 216.

IN COUNCIL, OAKLAND, CALIFORNIA, _____ , 2007

PASSED BY THE FOLLOWING VOTE:

AYES- BROOKS, BRUNNER, CHANG, KERNIGHAN, NADEL, QUAN, REID, AND PRESIDENT DE LA FUENTE

NOES -

ABSENT –

ABSTENTION -

ATTEST:_____
LATONDA SIMMONS
City Clerk and Clerk of the Council
of the City of Oakland, California

OFFICE OF THE CITY CLERK

2007 JUN 14 PM 2:45

INTRODUCED BY

COUNCILMEMBER

REVISED

APPROVED FOR FORM AND LEGALITY

DEPUTY CITY ATTORNEY

OAKLAND CITY COUNCIL

Ordinance No. _____ C.M.S.

ORDINANCE ADOPTING OAKLAND MUNICIPAL CODE CHAPTER 15.30 TO ESTABLISH A VOLUNTARY SEISMIC STRENGTHENING REIMBURSEMENT INCENTIVE PROGRAM FOR RESIDENTIAL BUILDINGS AND AMENDING THE MASTER FEE SCHEDULE TO ESTABLISH A VOLUNTARY SEISMIC STRENGTHENING PERMIT FEE

WHEREAS, the United States Geological Service has forecasted with a probability of sixty-two percent (62%) that a magnitude 6.7 (Richter scale) or larger seismic event will occur along an earthquake fault in the San Francisco Bay Area before the year 2032; and

WHEREAS, an earthquake of this magnitude would cause social and economic disruption in the San Francisco Bay Area equal to or greater than the 1989 Loma Prieta earthquake (magnitude 6.9); and

WHEREAS, an earthquake of this magnitude would cause an estimated tens of billions of dollars of economic loss in the San Francisco Bay Area, half of which would be loss in damaged residences; and

WHEREAS, an earthquake of this magnitude would cause an estimated 36,000 uninhabitable housing units in Oakland, which is approximately one-third of Oakland's existing housing stock; and

WHEREAS, enhancing the structural resistance of wood-framed, one- and two-story, one- and two-family residential buildings (Group R, Division 3 occupancy) to seismically induced lateral loads through a minimal level of strengthening would provide Oakland property owners, financial lenders, property insurers, and residents an additional margin of safety against detrimental damage during and following an earthquake of this magnitude; and

WHEREAS, an estimated eighty-five percent (~~80~~ 85%) of Oakland's existing residential buildings constructed before modern earthquake codes were adopted have not been even minimally strengthened for seismic-induced lateral loads; and

WHEREAS, the average construction cost for installing seismic strengthening based on a non-prescriptive engineered design for existing residential buildings that braces cripple walls and fastens sill plates to the foundation is estimated between $ ~~4,000~~ 7,000 and $ ~~20,000~~ 30,000; and

WHEREAS, there is an immediate need to develop a low-cost seismic strengthening prescriptive (non-engineered) design for residential buildings that provides a minimum level of life-safety performance for property owners, financial lenders, insurers, and residents; and

WHEREAS, the current edition of the California Building Code does not provide a prescriptive design method to strengthen residential buildings with unbraced cripple walls and unfastened foundation sill plates to resist earthquakes; and

WHEREAS, a low-cost prescriptive design for minimally strengthening unbraced cripple walls and unfastened sill plates has been developed by a committee representing the East Bay, Peninsula, and Monterey Bay Chapters of the International Code Council (ICC) with additional committee representation by other governmental organizations that have been approved by the three chapters of ICC, the Association of Bay Area Governments (ABAG), the California Building Officials (CALBO), the Structural Engineers Association of Northern California, and the Earthquake Engineering Research Institute of Northern California; and

WHEREAS, establishing financial incentives for property owners to strengthen existing residential dwellings with unbraced cripple walls and unfastened sill plates either with a non-prescriptive (engineered) design or a prescriptive design would significantly reduce the risk of damage to buildings and injury to the occupants and general public during and after an earthquake of this magnitude; and

WHEREAS, establishing determinate permit fees for the installation of seismic strengthening methods would expand the financial incentives for property owners to retrofit existing residential buildings and enhance the opportunities for the public to benefit from a reduction of the seismic hazard to the housing stock in Oakland; now, therefore,

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Article I - Scope

Section 15.30.010 Title

This chapter shall be known as "Voluntary Seismic Strengthening For Residential Buildings".

Section 15.30.020 ~~Purpose~~ Intent

This chapter is intended to promote public safety and welfare and safeguard life and limb, health, and property through a voluntary program for structurally strengthening the portions of wood framed residential buildings that are most vulnerable to earthquake damage. The prescriptive

structural strengthening standards set forth herein will reduce the risk of seismically-induced damage by improving the structural resistance of these buildings.

This chapter is not intended to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms set forth herein, and these standards are not intended to endorse, authorize, or approve any prior work accomplished without required permits, inspections, fees, or final approvals.

Section 15.30.030 ~~Intent~~ Purpose

A. Prescriptive Design

1. This chapter establishes voluntary prescriptive design standards for the structural strengthening of underfloor enclosures to resist seismic loads without requiring plans or calculations prepared by a ~~licensed~~ registered design professional or in accordance with the Oakland Building Construction Code. Sufficient documentation shall be submitted to accurately establish existing conditions. When the Building Official determines that existing conditions are beyond the scope of these prescriptive standards, an engineering analysis ~~shall be~~ prepared by a ~~licensed~~ registered design professional shall be submitted.
2. Alternate details and methods equivalent to or exceeding the prescriptive design standards in this chapter are permitted when approved by the Building Official. ~~The Building Official may require~~ Sufficient documentation shall be submitted to substantiate such equivalence.

B. Non-Prescriptive Design

1. This chapter also ~~provides for~~ allows voluntary non-prescriptive designs equivalent to or exceeding the prescriptive design standards in this chapter. Seismic strengthening calculations, plans, and specifications for associated permits shall be prepared by registered design professionals. Analysis and documentation with respect to lateral strength, deflection, and soil capacity shall be in accordance with the Oakland Building Construction Code and approved by the Building Official.

2. Non-prescriptive designs for strengthening structural weaknesses set forth in Sections 15.30.200.A.1 through A.4 (inclusive) may incorporate the prescriptive design standards set forth in the Oakland Building Construction Code when approved by the Building Official.

Section 15.30.040 Application

A. Exclusions

This chapter shall apply solely to existing, wood-framed, one- and two-story residential buildings classified either as a Group R, Division 3 occupancy or as a Group R, Division 3 occupancy with an attached Group U, Division 1 occupancy. The prescriptive design standards in this chapter shall not apply to buildings, or portions thereof, with any of the following structural elements or features:

1. Lateral force resisting system using or containing poles or columns embedded in the ground ~~or using unreinforced concrete or assembled masonry~~.
2. Cripple wall height exceeding ~~48 inches~~ 4-feet, as measured vertically at any point.
3. Building exceeding 2-stories in height or exceeding 3,000 square feet of combined floor area for a 2-story building or exceeding 2,000 square feet of floor area for a 1-story building, as defined in the Oakland Building Construction Code.
4. Building erected on a concrete slab-on-grade.
5. Building erected on or into sloping ground with a surface gradient ~~exceeding~~ steeper than 3-units horizontally to 1-unit vertically, as measured at any point.
6. Clay or concrete roof tiles with mortared edges.
7. Building framing other than wood.
8. Brick or stone veneer height exceeding 4-feet, as measured vertically at any point.

B. Historic Buildings

Residential buildings that have been qualified as historic shall be permitted to use alternate building regulations, as set forth in the State Historical Building Code, to preserve their original or restored architectural elements and features.

Section 15.30.050 Amendments

Where any section, subsection, sentence, clause, phrase, or other part of the Oakland Building Construction Code recited in this chapter is amended subsequently, all provision of the original section not so specifically amended shall remain in full force and effect and all amended provisions shall be considered as added thereto.

Article II - Administrative

Section 15.30.100 Definitions

As used in this chapter, the following terms shall have the meanings set forth hereto:

Adhesive Anchor is an approved proprietary fastener placed in hardened concrete or masonry that derives its holding strength from a chemical adhesive compound placed between the wall of the hole and the embedded portion of the anchor.

Anchor Side Plate is an approved proprietary metal plate or plates used to connect a wood sill plate to the side of a concrete or masonry foundation.

Assembled Masonry includes adobe, burned clay, concrete or sand-lime brink, hollow clay or concrete block, hollow clay tile, rubble, cut stone, and unburned clay masonry in which the area of reinforcement is less that fifty percent (50%) of the minimum steel ratios required for reinforced masonry by the Oakland Building Construction.

Building Official is the Building Official of the City of Oakland, as identified in the Oakland Building Construction Code, or his or her designee, and successors in title.

City is the City of Oakland, a municipal corporation.

City Administrator is the City Administrator of the City of Oakland or his or her designee, and successors in title.

Cripple Wall is a wood-framed wall extending from the top of the perimeter foundation to the underside of the lowest floor framing.

Expansion Anchor is an approved proprietary mechanical fastener placed in hardened concrete or masonry that is designed to expand in a self-drilled or pre-drilled hole of a specified diameter and depth and engage the sides of the hole in one or more locations to develop shear and/ or tension resistance to applied loads without grout or chemical adhesive.

Group R, Division 3 occupancy is a ~~residential building~~ one- or two-family residence, as defined and used in the Oakland Building Construction Code.

Group U, Division 1 occupancy is a private garage, as defined and used in the Oakland Building Construction Code.

Non-Prescriptive (Engineered) Design is a seismic strengthening method that is prepared under the responsible charge of a ~~licensed~~ registered design professional in accordance with the Oakland Building Construction Code.

Oakland Building Construction Code is the most current edition of the California Building Code with amendments adopted by the City of Oakland, as set forth in Oakland Municipal Code, Title 15, Chapter 15.04, and successors in title.

Perimeter Foundation is a foundation system that is located ~~under~~ beneath and provides support for the exterior walls of a building or structure.

Purchaser is an individual, group of individuals, limited partnership, limited liability company, corporation, or other entity who by recorded instrument acquires title through assignment, transfer, or other conveyance to real property located within the corporate limits of the City of Oakland that has been previously improved with a residential building.

~~Licensed~~ **Registered Design Professional** is an architect or engineer possessing a valid license issued by the State of California to perform civil, structural, soil, or geotechnical related design, material classification and analysis, and structural observation.

Residential Building is a habitable structure for which a Certificate of Occupancy has not been revoked that is classified by the Building Official solely as a Group R, Division 3 occupancy or as a Group R, Division 3 occupancy with an attached Group U, Division 1 occupancy.

Seismic Strengthening is an approved improvement of the lateral force resisting system of the structure by an alteration of existing or addition of new structural elements.

Supplemental Connector is an approved proprietary metal framing connection.

Unreinforced Concrete is concrete in which the area of reinforcement is less that fifty percent (50%) of the minimum steel ratios required for reinforced concrete by the Oakland Building Construction.

Section 15.30.110 Rule, Regulations, and Interpretations

A. The Building Official may adopt administrative rules and regulations as required to implement this chapter and may make non-administrative interpretations as required to achieve the purposes of this chapter.

B. The City Administrator may adopt administrative rules and regulations as required to implement the financial incentives of this chapter.

Article III – Non-Administrative

Section 15.30.200 Structural Weaknesses

A. Structural weaknesses shall include the following:

1. Sill plates or floor framing supported directly on the ground without an approved foundation system.
2. Perimeter foundation constructed of wood posts supported by isolated footings.
3. Perimeter foundation that is not continuous.

   Exception: existing porches, storage rooms, and similar spaces that do not contain fuel-burning appliances.
4. Perimeter foundation constructed of unreinforced concrete or assembled masonry.
5. Sill plates not connected to the foundation in accordance with this chapter.
6. Cripple walls not braced in accordance with this chapter.

B. ~~Issuance of~~ A separate permit for ~~prescriptive and non-prescriptive seismic~~ strengthening ~~required by this chapter shall be conditioned upon issuance of a separate permit for construction in accordance with the Oakland Building construction code of a new or replacement perimeter foundation for~~ structural weaknesses set forth in Sections 15.30.200.A.1 through A.4 (inclusive) shall be required as a condition of issuance of a permit for strengthening structural weaknesses set forth in Sections 15.30.200.A.5 and A.6.

Section 15.30.210 Seismic Strengthening - General

A. Scope

1. ~~The structural weaknesses set forth in this chapter shall be seismically strengthened in accordance with this Chapter. Seismic strengthening of existing~~ Residential buildings may be seismically strengthened by newly installed construction and alteration of existing construction. Alternate prescriptive and non-prescriptive designs shall be equivalent to or exceed the performance levels of this chapter and be approved by the Building Official.

2. Alternative prescriptive designs with provisions for voluntary seismic retrofitting of wood-framed cripple walls have been developed by a committee representing the East Bay, Peninsula, and Monterey Bay Chapters of the International Code Council (ICC) with additional committee representation by other governmental organizations. Alternative prescriptive designs include those that were approved by the three chapters of ICC, the Association Of Bay Area Governments (ABAG), the California Building Officials (CALBO), the Structural Engineers Association of Northern California, and the Earthquake Engineering Research Institute of Northern California in October 2004, with later amendments, and are considered equivalent to this chapter.

B. Wood Materials

1. Wood materials that are part of the seismic strengthening system shall be free of defects which substantially reduce the structural capacity of the member. Wood material that is infested with or damaged by fungus or insects shall be replaced with new material that provides an equivalent original dimension and structural capacity of the existing member. Newly installed material in contact with concrete or masonry shall be approved preservative treated wood or foundation-grade redwood in accordance with the Oakland Building Construction Code.
2. Fasteners, anchors, washers, plates, connectors, and similar metal attachments shall be corrosion resistant metal and shall not be detrimentally affected by wood preservative coatings or impregnations in accordance with the Oakland Building Construction Code. Installed fasteners shall not split wood members.

Section 15.30.220 Seismic Strengthening - Quality Control

A. Permits, Inspections, and Fees

Applications, fees, permits, and inspection approvals shall be required for seismic strengthening and shall be in accordance with the Oakland Building Construction Code and the Master Fee Schedule.

B. Special Inspection

Special inspection for a prescriptive design shall not be required, unless otherwise determined to be necessary by the Building Official. Special inspection for a non-prescriptive design shall be in accordance with the Oakland Building Construction Code and the requirements of the ~~licensed~~ registered design professional in responsible charge of the ~~design~~ work.

C. Structural Observation

Structural observation shall not be required for a prescriptive design. Structural observation for a non-prescriptive design shall be in accordance with the Oakland Building Construction Code.

Section 15.30.230 Prescriptive Design - Framing

A. Floor Joists - End Bearing

End bearing of floor joists shall be restrained by a continuous rim joist (2-inch nominal thickness), or tightly-fitting, full-depth, lumber blocking (2-inch nominal thickness) or exterior grade

structural wood panel sheathing (1-inch minimum thickness). Bottom edge fasteners for rim joists and perimeter edge fasteners for blocking and sheathing shall be either 8d common angled ("toe") nails spaced apart 4-inches or equivalent supplemental connectors. ~~Fasteners shall not be detrimentally affected by wood preservative coatings or impregnations.~~ Foundation blocking or sheathing shall be installed between alternate floor joists. Cripple wall blocking or sheathing shall be installed between each floor joist, except for obstructions (piping, underfloor ventilation and access, conduits, ducts, etc.). The perimeter of supplemental blocking shall be fastened to adjoining members.

B. Floor Joists - Parallel Span

Floor joists that are parallel to a perimeter foundation shall have a parallel rim joist fully supported by the foundation sill plate or cripple wall top plate. Bottom edge fasteners for rim joists shall be ~~fastened~~ either 8d angled ("toe") nails spaced apart 4-inches or equivalent supplemental connectors.

Section 15.30.240 Prescriptive Design - Foundations

A. ~~Continuous~~ Construction

~~Replacement or new continuous~~ Foundations shall be constructed in accordance with the Oakland Building Construction Code. Soil investigations or geotechnical studies shall not be required unless the building has structural distress from soil movement.

B. ~~Non-Continuous, Unreinforced Concrete, Assemble Masonry~~ Analysis

~~New continuous unreinforced concrete and assembled masonry perimeter foundations shall be either:~~

1. Foundations with structural weaknesses set forth in Sections 15.30.200.A.1 and 15.30.200.A.2 shall be replaced with a continuous perimeter foundation.
2. Foundations with structural weaknesses set forth in Sections 15.30.200.A.3 and 15.30.200.A.4 shall be either
   a. replaced with a continuous perimeter foundation, or
   b. analyzed for structural adequacy by a ~~licensed~~ registered design professional for force levels determined by the formula

   $$V = 0.1375\,W$$, where V = base shear and W = tributary weight,

   and approved by the Building Official. Test reports to determine existing foundation material strengths, quality, and condition shall be submitted for review.

Section 15.30.250 Prescriptive Design - Sill Plates

A. Connection

Sill plates shall be connected to foundations in accordance with the Oakland Building Construction Code, or as otherwise approved by the Building Official. Anchors within braced panels of cripple walls shall be spaced apart not more than 32-inches (2-anchors minimum per

continuous sill plate). Sill plates shall be drilled for fasteners used with anchor side plates before installation.

B. ~~Proprietary~~ Anchors

Adhesive and expansion anchors shall be installed with a metal plate washer between the nut and the sill plate or supplemental block. Washers shall be 2-inch x 2-inch x 3/16-inch. Expansion anchors shall not be used in assembled masonry or unreinforced concrete foundations. Adhesive anchors shall be used where expansion anchors cause surface cracking of the foundation or cannot be tightened as required by the manufacturer's recommendations. Supplemental blocks for through-anchor installation, when installed, shall be 2-inch nominal thickness lumber and fastened to sill plates with not less than four 10d common nails.

Section 15.30.260 Prescriptive Design - Supplemental Connector

Supplemental connectors that are substituted for a group of individual fasteners shall provide a structural capacity equivalent to or exceeding the combined capacity of the fasteners.

Section 15.30.270 Prescriptive Design - Cripple Walls

A. Bracing

1. Cripple walls shall be braced with exterior grade structural wood panel sheathing not less than 15/32-inch thickness. Plywood sheathing shall be not less than five (5) plies.
2. Sheathing shall be fastened to cripple wall studs, top plate, and sill plate. Fasteners shall be 8d common nails spaced apart not more than 4-inches at sheathing edges and not more than 12-inches at intermediate supports and shall be installed not less than 3/8-inch from sheathing edges.
3. Sheathing horizontal joints shall be continuously supported between studs by full-width and full-depth, 2-inch nominal thickness lumber blocking. Sheathing vertical joints shall continuously supported by stud framing.
4. Supplemental studs ("sistered") shall be full-depth and full-height and fastened to existing studs with 16d common nails spaced apart not more than 8-inches in a vertically ~~alternating~~ staggered pattern (3-nails minimum).
5. ~~Fasteners shall not be detrimentally affected by wood preservative coatings or impregnations.~~
5. Top plates shall be lapped and fastened in accordance with the Oakland Building Construction Code or spliced with an equivalent supplemental connector installed on the sheathing face.
6. Supplemental blocking for sheathing bottom edge-nailing shall be full-width and full-depth between studs, 2x nominal thickness lumber, and fastened to sill plates with 10d common nails spaced apart not more than 6-inches in an alternating pattern (4-nails minimum).
7. Cutouts in sheathing and notches in top plates, sill plates, and existing studs for obstructions (piping, underfloor ventilation and access, ducts, etc.) shall be reinforced with supplemental connectors and approved by the Building Official.

B. Bracing Distribution

1. Braced End-Panels

Cripple walls shall be braced at each end of the wall line, or elsewhere along the wall line when approved by the Building Official. The horizontal length of a braced end-panel shall be not less than 8-feet, measured at any point.

2. Braced Intermediate-Panels

Cripple walls also may be braced with intermediate-panels spaced apart evenly between braced end-panels. The horizontal length of an intermediate-panel shall be not less than 4-feet, measured at any point, and not less than twice the vertical height of the braced panel for buildings with tile roofing or with portland cement plaster or brick or stone veneer exterior building surfaces.

3. Unbraced Sections

Cripple walls may have unbraced sections between braced panels. The horizontal length of an unbraced section of wall line shall be

a. not more than 16-feet, measured at any point, for a 1-story building with wood exterior building surfaces, and

b. not more than 12-feet, measured at any point, for a 1-story building with tile roofing or with portland cement plaster or brick or stone veneer exterior building surfaces, and

c. not more than 8-feet, measured at any point, for 2-story buildings with tile roofing or with portland cement plaster or brick or stone veneer exterior building surfaces.

C. Ventilation

1. Underfloor ventilation shall not be reduced.
2. Sheathed stud cavities shall be individually ventilated with 2-inch diameter holes drilled through the bracing sheathing, and centered within the stud cavity, and located not less than 1-inch below the top plate, and 1-inch above the sill plate, and 1-inch above and below horizontal blocking. Cavities with stud height less than 18-inches shall have a single ventilation hole.

Section 15.30.280 Prescriptive Design - Deviations

Substantive deviations from the prescriptive design requirements in this chapter shall be analyzed by a ~~licensed~~ registered design professional and approved by the Building Official. Calculations, plans, and specifications shall be in accordance with the Oakland Building Construction Code.

Article IV – Financial Incentives

Section 15.30.300 Financial Incentives - Qualifications

A. From time to time, the City may provide opportunities for purchasers and current owners of existing residential buildings to apply for financial incentives to voluntarily strengthen their residences against earthquake damage. To qualify, purchasers and current owners shall complete either a prescriptive or non-prescriptive seismic strengthening upgrade in full conformance with the approved design and all conditions of the issued permit.

B. Purchasers and current owners shall not be eligible for financial incentives for work previously completed, with or without required permits, fees, or inspection approvals, which conforms with or exceeds either a prescriptive or non-prescriptive seismic strengthening design. Inspection of residential buildings by the Building Official to confirm the ~~extent~~ presence or absence of previously installed seismic strengthening and its structural capacity shall be a condition of permit issuance.

Section 15.30.310 Financial Incentives - Program

Financial incentives, as may be available, shall include the following:

A. A determinate permit fee, as established in the Master Fee Schedule.

B. A portion of the real estate transfer tax for a newly purchased residential building, not to exceed one-half of one percent (0.5 %) of the purchase price of the residential building, as verified by the Building Official, or $5,000.00, whichever is the lesser amount.

Section 15.30.320 Financial Incentives - Requirements

A. To qualify for a determinate permit fee incentive, as may be available, the purchaser or current owner shall:

1. Submit a certified copy of the recorded instrument of ownership with a permit application to the Building Official.
2. Within 1-year following approval of the permit application for issuance, receive a Certificate of Completion of the work from the Building Official.
3. Within 30-calendar days following issuance of a Certificate of Completion, submit an instrument approved by the Building Official establishing continuing ownership of the real property.

B. To qualify for a real estate transfer tax incentive, as may be available, the purchaser shall:

1. Within 60-calendar days following recordation by the Alameda County Clerk-Recorder of a transfer of ownership of the real property to the purchaser, submit the following documentation with a complete permit application to the Building Official:
   a. certified copy of the recorded instrument of ownership transfer, and
   b. approved instrument establishing the purchase price of the residential building.
2. Within 1-year following approval of the permit application for issuance, receive a Certificate of Completion of the work from the Building Official.
3. Within 30-calendar days following issuance of a Certificate of Completion, submit an approved instrument to the Building Official establishing continuing ownership of the real property.

SECTION 2. Findings

The recitals contained in this Ordinance are true and correct and are an integral part of the Council's decision, and are hereby adopted as findings.

SECTION 3. Severability

The provisions of this Ordinance are severable, and if any clause, sentence, paragraph, provision, or part of this Ordinance, or the application of this Ordinance to any person, is held to be invalid or preempted by state or federal law, such holding shall not impair or invalidate the remainder of this Ordinance. If any provision of this Ordinance is held to be inapplicable, the provisions of this Ordinance shall nonetheless continue to apply with respect to all other covered development projects and applicants. It is hereby declared to be the legislative intent of the City Council that this Ordinance would have been adopted had such provisions not been included or such persons or circumstances been expressly excluded from its coverage.

SECTION 4. California Environmental Quality Act

The Council of the City of Oakland finds and determines that this Ordinance complies with the California Environmental Quality Act (CEQA), based on the following, each of which provides a separate and independent basis:

1. CEQA Guidelines Section 15061(B)(3); and
2. CEQA Guidelines Section 150301 (existing facilities); and
3. CEQA Guidelines Section 150302 (replacement or reconstruction).

SECTION 5. Master Fee Schedule Amendment

The Master Fee Schedule of the City of Oakland is hereby amended to establish a determinate reduced building permit fee for the voluntary seismic strengthening of applicable residential buildings set forth herein, in the amount of two-hundred fifty dollars ($250.00), or as increased, decreased, or otherwise modified or deleted by subsequent ordinance amending the Master Fee Schedule. Such amendments by ordinance of the Master Fee Schedule shall not also require amendments to this ordinance.

SECTION 6. Effective Date

This Ordinance shall be effective on and after its adoption by sufficient affirmative votes of the Council of the City of Oakland, as provided in the Charter of the City of Oakland, Section 216.

IN COUNCIL, OAKLAND, CALIFORNIA, _____ , 2007

PASSED BY THE FOLLOWING VOTE:

AYES- BROOKS, BRUNNER, CHANG, KERNIGHAN, NADEL, QUAN, REID, AND PRESIDENT DE LA FUENTE

NOES -

ABSENT –

ABSTENTION -

ATTEST: _____
LATONDA SIMMONS
City Clerk and Clerk of the Council
of the City of Oakland, California