CHAPTER 18.42 ELECTRICAL CODE

CHAPTER 18.42
ELECTRICAL CODE

18.42.010 – Adoption.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2013 Edition of the California Electrical Code, including Annexes A, B and C, but excluding articles, chapters or annexes pursuant to Section 18.42.040. The California Electrical Code is Part 3 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is based on the provisions of the 2011 National Electrical Code (model code) as developed by the National Fire Protection Association with necessary California amendments.

The adoption of the 2013 Edition of the California Electrical Code (herein referred to as "California Electrical Code") is subject to the changes, amendments and modifications to said code as provided in this chapter, and certain provisions of the Long Beach Municipal Code, which shall remain in full force and effect as provided in this title. Such codes and code provisions shall constitute and be known as the Long Beach Electrical Code. A copy of the California Electrical Code, printed as code in book form, shall be on file in the office of the City Clerk.

18.42.020 – Application.

The provisions of the model code (the National Electrical Code), which are incorporated into the California Electrical Code, are applicable to all occupancy groups and uses regulated by the model code. The amendments made by the State agencies to the model code and incorporated into the California Electrical Code are applicable only to those occupancies or uses that the State agency making the amendments is authorized to regulate, as listed in Article 89 of the California Electrical Code. The Building and Safety Bureau shall only enforce those amendments made by the following State agencies:

A. The California Energy Commission (CEC) as specified in Article 89.105 of the California Electrical Code.

B. The Department of Housing and Community Development (HCD) as specified in Article 89.108 of the California Electrical Code.

C. The Division of the State Architect, Access Compliance (DSA/AC) as specified in Article 89.109 of the California Electrical Code.

D. The Office of Statewide Health, Planning and Development (OSHPD 3) as specified in Article 89.110 of the California Electrical Code.

E. The Office of the State Fire Marshal (SFM) as specified in Article 89.111 of the California Electrical Code.

18.42.030 – Amendments to the adopted code.

The California Electrical Code is amended and modified as set forth in Section 18.42.040.

18.42.040 – Articles, chapters or annexes deleted from the adopted code.

The following sections, chapters or annexes of the California Electrical Code are deleted: Annexes D, E, F, G, H, and I.

CHAPTER 18.43 PLUMBING CODE

CHAPTER 18.43
PLUMBING CODE

18.43.010 – Adoption.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2013 Edition of the California Plumbing Code, including Appendices A, B, D, I and K, but excluding sections, chapters or appendices pursuant to Section 18.43.040. The California Plumbing Code is Part 5 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is based on the provisions of the 2012 Uniform Plumbing Code (model code) as developed by the International Association of Plumbing and Mechanical Officials with necessary California amendments.

The adoption of the 2013 Edition of the California Plumbing Code (herein referred to as "California Plumbing Code") is subject to the changes, amendments and modifications to said code as provided in this chapter, and certain provisions of the Long Beach Municipal Code, which shall remain in full force and effect as provided in this title. Such codes and code provisions shall constitute and be known as the Long Beach Plumbing Code. A copy of the California Plumbing Code, printed as code in book form, shall be on file in the office of the City Clerk.

18.43.020 – Application.

The provisions of the model code (the Uniform Plumbing Code), which are incorporated into the California Plumbing Code, are applicable to all occupancy groups and uses regulated by the model code. The amendments made by the State agencies to the model code and incorporated into the California Plumbing Code are applicable only to those occupancies or uses that the State agency making the amendments is authorized to regulate, as listed in Chapter 1, Division I of the California Plumbing Code. The Building and Safety Bureau shall only enforce those amendments made by the following State agencies:

A. The California Energy Commission (CEC) as specified in Section 1.5 of the California Plumbing Code.

B. The Department of Housing and Community Development (HCD) as specified in Section 1.8 of the California Plumbing Code.

C. The Division of the State Architect, Access Compliance (DSA/AC) as specified in Section 1.9 of the California Plumbing Code.

D. The Office of Statewide Health, Planning and Development (OSHPD 3) as specified in Section 1.10 of the California Plumbing Code.

E. The Office of the State Fire Marshal (SFM) as specified in Section 1.11 of the California Plumbing Code.

18.43.030 – Amendments to the adopted code.

The California Plumbing Code is amended and modified as set forth in Sections 18.43.040 through 18.43.060.

18.43.040 – Sections, chapters or appendices deleted from the adopted code.

The following sections, chapters or appendices of the California Plumbing Code are deleted: Sections 101.0 through 103.8 and Table 103.4 of Chapter 1, Division II; and Appendices G and L.

18.43.050 – Amend CPC Section 403.3.1.1—Non water urinal drainage connection.

Section 403.3.1.1 of the 2013 Edition of the California Plumbing Code is amended by deleting the reference to "(HCD)".

18.43.060 – Amend CPC Section 604.11—Lead content.

Section 604.11 of the 2013 Edition of the California Plumbing Code is amended to read as follows:

604.11 Lead Content. Water pipe, plumbing fittings, fixtures, solder, and flux with lead content used to convey potable water shall comply with the Section 116875 of the California Health and Safety Code.

CHAPTER 18.44 MECHANICAL CODE

CHAPTER 18.44
MECHANICAL CODE

18.44.010 – Adoption.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2013 Edition of the California Mechanical Code, including Appendices A, B, C and D, but excluding sections, chapters or appendices pursuant to Section 18.44.040. The California Mechanical Code is Part 4 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is based on the provisions of the 2012 Uniform Mechanical Code (model code) as developed by the International Association of Plumbing and Mechanical Officials with necessary California amendments.

The adoption of the 2013 Edition of the California Mechanical Code (herein referred to as "California Mechanical Code") is subject to the changes, amendments and modifications to said code as provided in this chapter, and certain provisions of the Long Beach Municipal Code, which shall remain in full force and effect as provided in this title. Such codes and code provisions shall constitute and be known as the Long Beach Mechanical Code. A copy of the California Mechanical Code, printed as code in book form, shall be on file in the office of the City Clerk.

18.44.020 – Application.

The provisions of the model code (the Uniform Mechanical Code), which are incorporated into the California Mechanical Code, are applicable to all occupancy groups and uses regulated by the model code. The amendments made by the State agencies to the model code and incorporated into the California Mechanical Code are applicable only to those occupancies or uses that the State agency making the amendments is authorized to regulate, as listed in Chapter 1, Division II of the California Mechanical Code. The Building and Safety Bureau shall only enforce those amendments made by the following State agencies:

A. The California Energy Commission (CEC) as specified in Section 1.5 of the California Mechanical Code.

B. The Department of Housing and Community Development (HCD) as specified in Section 1.8 of the California Mechanical Code.

C. The Division of the State Architect, Access Compliance (DSA/AC) as specified in Section 1.9 of the California Mechanical Code.

D. The Office of Statewide Health, Planning and Development (OSHPD 3) as specified in Section 1.10 of the California Mechanical Code.

E. The Office of the State Fire Marshal (SFM) as specified in Section 1.11 of the California Mechanical Code.

18.44.030 – Amendments to the adopted code.

The California Mechanical Code is amended and modified as set forth in Section 18.44.040.

18.44.040 – Sections, chapters or appendices deleted from the adopted code.

The following sections, chapters or appendices of the California Mechanical Code are deleted: Sections 101.0 through 118.0 and Table 114.1 of Chapter 1, Division II; and Appendices E, F and G.

CHAPTER 18.45 HOUSING CODE

CHAPTER 18.45
HOUSING CODE

18.45.010 – Adoption.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 1997 Edition of the Uniform Housing Code, excluding sections, chapters or appendices pursuant to Section 18.45.040. Adoption and enforcement of the Uniform Housing Code is madated through the State Housing Law pursuant to Section 17960, Part 1.5, Division 13, of the California Health and Safety Code. Section 17922 of the California Health and Safety Code requires the adoption of the latest edition of the Uniform Housing Code. The 1997 Edition of the Uniform Housing Code was adopted by the California Department of Housing and Community Development as provided for in Section 32, Article 5, Subchapter 1, Division 1, of Title 25 of the California Code of Regulations. The provisions of the 1997 Uniform Housing Code were developed by the International Conference of Building Official.

The adoption of the 1997 Edition of the Uniform Housing Code (herein referred to as "Uniform Housing Code") is subject to the changes, amendments and modifications to said code as provided in this chapter, and certain provisions of the Long Beach Municipal Code, which shall remain in full force and effect as provided in this title. Such codes and code provisions shall constitute and be known as the Long Beach Housing Code. A copy of the Uniform Housing Code, printed as code in book form, shall be on file in the office of the City Clerk.

18.45.020 – Application.

The provisions of the Uniform Housing Code are applicable to all occupancy groups and uses intended for human habitation.

18.45.030 – Amendments to the adopted code.

The Uniform Housing Code is amended and modified as set forth in Sections 18.45.040 and 18.45.050.

18.45.040 – Sections, chapters or appendices deleted from the adopted code.

The following sections, chapters or appendices of the Uniform Housing Code are deleted: Chapters 1, 2, 3, 4, 10, 11, 12, 13, 14, 15 and 16.

18.45.050 – Add UHC Chapter 17—Prohibited uses and maintenance.

Chapter 17 is added to the 1997 Edition of the Uniform Housing Code to read as follows:

Chapter 17
PROHIBITED USES AND MAINTENANCE

SECTION 1701 – PROHIBITED USES

A. Cooking. It shall be unlawful for any person to cook or prepare food or to permit another person to cook or prepare food in any bath, shower, slop sink, toilet room, water closet compartment, any room not designed and intended to be used as a kitchen, or in any other portion of a building in which the cooking or preparation of food is detrimental to the health of the occupants or the proper sanitation of the building.

B. Sleeping. It shall be unlawful for any person to use or to permit another person to use any of the following portions of a building for sleeping purposes:

1. Kitchen, hallway, water closet, bath, cellar, shower compartment or slop sink room.

2. Any other room or place which does not comply with the provisions of this code as a sleeping room or in which sleeping is dangerous to life or health.

SECTION 1702 – MAINTENANCE AND REPAIR

A. Maintenance. Every building shall be maintained in good repair.

B. Roof. The roof of every building shall be kept watertight and all storm or casual water shall be properly drained and conveyed from the roof to a storm drain or street gutter in accordance with other applicable provisions of this chapter.

C. Drainage. All portions of a lot about a building, including the yards, areaways, vent shafts, court and passageways, shall be graded and drained to efficiently carry the water away from the building.

D. Surfacing. If the Building Official finds it necessary for the protection of the health and safety of the occupants, or for the proper sanitation of a dwelling, apartment house or hotel, it may require that the yards, areaways, vent shafts, court, passageways, or other parts of the lot surrounding the building be graveled, or properly paved and surfaced with concrete, asphalt or similar materials.

E. Painting of room walls and ceilings. The walls and ceilings of every room in a dwelling, apartment house or hotel shall be finished, sealed, coated or covered in an approved manner. Approved materials shall be applied as often as may be necessary to maintain the walls and ceilings in a clean and sanitary condition.

F. Painting of court and shaft walls. Unless built of light-colored materials, the walls of courts and shafts shall be painted in a light color, or shall be whitewashed. The paint or whitewash shall be applied as often as may be necessary to maintain the walls in a light color.

G. Wallpaper. Not more than two (2) thicknesses of wallpaper shall be placed upon any wall, partition, or ceiling of any room in any dwelling, apartment house or hotel. If any wall, partition, or ceiling with two (2) thicknesses of wallpaper in any such room is to be repapered, the old wallpaper shall first be removed. Any wallpaper which has become loose or dilapidated shall be removed and the surface repapered, calcimined or painted.

H. Painting of wallpaper. Paint or calcimine over wallpaper is permissible if the plaster under the wallpaper is in good condition.

I. Screening. Whenever necessary for the health of the occupants, or for the proper sanitation or cleanliness of any building, acceptable mosquito screening shall be provided for each exterior door, window, or other opening in the exterior walls of the buildings.

J. Garbage receptacle compartment. Every residential building shall be provided with facilities adequate for the storing of all garbage and waste, either within an approved compartment or receptacles. These facilities shall be maintained in a clean and sanitary condition.

K. Fences. All fences shall be maintained in good repair and shall be kept straight, uniform and structurally sound. Wooden fences shall be either painted or stained or otherwise treated or sealed in an approved manner to prevent their becoming a nuisance from weathering or deterioration.

L. Sanitation. Each room, hallway, passageway, stairway, wall, partition, ceiling, floor, skylight, glass window, door carpet, rug, matting, window curtain, water closet, compartment, or room, toilet room, bathroom, slop sink room, washroom, plumbing fixtures, drain, roof, closet, cellar, basement, yard, court, lot and the premises of every building shall be kept in every part clean,

sanitary, and free from all accumulation of debris, abandoned or inoperable motor vehicles and vehicle parts, filth, rubbish, garbage, rodents, insects and other vermin, excessive vegetation and other offensive matter.

M. Dangerous articles. No article that is dangerous or detrimental to life or to the health of the occupants, including any feed, hay, straw, excelsior, cotton, paper stock, rags, junk, or any other material that may create a fire hazard, shall be kept, stored or handled in any part of a dwelling, apartment house or hotel, or on the lot on which such building is located.

N. Caretaker. A janitor, housekeeper, or other responsible person shall reside upon the premises and shall have charge of every apartment house in which there are sixteen (16) or more apartments, of every hotel in which there are twelve (12) or more guest rooms, unless the owner of any such apartment house or hotel resides upon said premises. If the owner does not reside upon the premises of any apartment house in which there are more than four (4) but less than sixteen (16) apartments, a notice stating the owner's name and address or the name and address of his agent in charge of the apartment house shall be posted in a conspicuous place on the premises.

O. Bedding. In every apartment house or hotel, every part of every bed, including mattress, sheets, blankets, and bedding, shall be kept in a clean, dry and sanitary condition, free from filth, urine or other foul matters, and from the infection of lice, bedbugs or other insects. The bed linen of a bed in a hotel shall be changed at least as often as a new guest occupies the bed.

CHAPTER 18.46 ENERGY CODE

CHAPTER 18.46
ENERGY CODE

18.46.010 – Adoption.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2013 Edition of the California Building Energy Efficiency Standards. The California Building Energy Efficiency Standards is Part 6 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is developed by the California Energy Commission.

The adoption of the 2013 Edition of the California Building Energy Efficiency Standards (herein referred to as "California Energy Code" and certain provisions of the Long Beach Municipal Code shall remain in full force and effect as provided in this title. Such codes and code provisions shall constitute and be known as the Long Beach Energy Code. A copy of the California Energy Code, printed as code in book form, shall be on file in the office of the City Clerk.

18.46.020 – Application.

The provisions of the California Energy Code are applicable to all occupancy groups and uses regulated by Section 100.0 of Subchapter 1 of said code. The Building and Safety Bureau enforce those provisions made by the California Energy Commission (CEC).

CHAPTER 18.47 GREEN BUILDING STANDARDS CODE

CHAPTER 18.47
GREEN BUILDING STANDARDS CODE

18.47.010 – Adoption.

The City Council adopts and incorporates by reference as though set forth in full in this chapter the 2013 Edition of the California Green Building Standards Code, excluding sections, chapters or appendices pursuant to Section 18.47.040. The California Green Building Standards Code is Part 11 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code.

The adoption of the 2013 Edition of the California Green Building Standards Code (herein referred to as "California Green Building Standards Code") is subject to the changes, amendments and modifications to said code as provided in this chapter, and certain provisions of the Long Beach Municipal Code, which shall remain in full force and effect as provided in this title. Such codes and code provisions shall constitute and be known as the Long Beach Green Building Standards Code. A copy of the California Green Building Standards Code, printed as code in book form, shall be on file in the office of the City Clerk.

18.47.020 – Application.

The provisions of the California Green Building Standards Code are applicable only to those occupancies or uses that the State agency making the amendments is authorized to regulate, as listed in Chapter 1 of the California Green Building Standards Code. The Building and Safety Bureau shall only enforce those amendments made by the following State agencies:

A. The Building Standards Commission as specified in Section 103.1 of the California Green Building Standards Code.

B. The Department of Housing and Community Development (HCD) as specified in Section 104.1 of the California Green Building Standards Code.

18.47.030 – Amendments to the adopted code.

The California Green Building Standards Code is amended and modified as set forth in Sections 18.47.040 through 18.47.060.

18.47.040 – Sections, chapters or appendices deleted from the adopted code.

The following sections, chapters or appendices of the California Green Building Standards Code are deleted: Appendices A4, A5, and A6.1.

18.47.050 – Amend CGBSC Section 4.408—Construction and demolition recycling program.

Section 4.408 of the 2013 Edition of the California Green Building Standards Code is deleted in its entirety and replaced to read as follows:

SECTION 4.408
CONSTRUCTION AND DEMOLITION RECYCLING PROGRAM

4.408.1 General. Covered projects meeting the threshold of Section 18.67.020 of Title 18 of the Long Beach Municipal Code shall comply with Chapter 18.67 Construction and Demolition Recycling Program of Title 18 of the Long Beach Municipal Code.

18.47.060 – Amend CGBSC Section 5.408—Construction and demolition recycling program.

Section 5.408 of the 2013 Edition of the California Green Building Standards Code is deleted in its entirety and replaced to read as follows:

SECTION 5.408
CONSTRUCTION AND DEMOLITION RECYCLING PROGRAM

5.408.1 General. Covered projects meeting the threshold of Section 18.67.020 of Title 18 of the Long Beach Municipal Code shall comply with Chapter 18.67 Construction and Demolition Recycling Program of Title 18 of the Long Beach Municipal Code.

CHAPTER 18.48 FIRE CODE

18.48.560 – CFC Chapter 9, Section 912.1—Installation.
18.48.570 – CFC Chapter 9, Section 912.2.1—Visible location.
18.48.580 – CFC Chapter 9, Section 912.3—Access.
18.48.590 – CFC Chapter 10, Section 1003—General means of egress.
18.48.600 – CFC Chapter 10, Section 1009.16—Stairway to roof.
18.48.610 – CFC Chapter 10, Section 1009.16—Stairway to roof.
18.48.620 – CFC Chapter 10, Section 1009.16—Stairway to roof.
18.48.630 – CFC Chapter 10, Section 1028.12—Seat stability.
18.48.640 – CFC Chapter 23, Section 2303.1.1—Protection of dispensing devices.
18.48.650 – CFC Chapter 23, Section 2306.7.9.2—Vapor processing system.
18.48.660 – CFC Chapter 35—Welding and other hot work.
18.48.670 – CFC Chapter 36, Section 3604—Fire protection equipment.
18.48.680 – CFC Chapter 48, Section 4807.1—Fire safety officers.
18.48.690 – CFC Chapter 56, Section 5601—General.
18.48.700 – CFC Chapter 56, Section 5608—Fireworks Display.
18.48.710 – CFC Chapter 57, Section 5704.2.11.3—Depth and cover.
18.48.720 – CFC Chapter 57, Section 5705.3.5.2—Occupancy quantity limits.
18.48.730 – CFC Chapter 61, Section 6101—General.
18.48.740 –CFC Chapter 61, Section 6103.2.2—Industrial vehicles and floor maintenance machines.
750 – CFC Chapter 61, Section 6104.3—Container location.

18.48.760 – CFC Chapter 61, Section 6101.3 – Construction documents.
18.48.770 – CFC Appendix Chapter B, Section B105.2—Buildings other than one- and two-family dwellings.

CHAPTER 18.48
FIRE CODE

18.48.010 – Adoption.

The City Council adopts and incorporates by reference as though set forth in full in this chapter The 2013 Edition of the California Fire Code (CFC), excluding sections, chapters or appendices pursuant to Section 18.48.040. The California Fire Code is Part 9 of the California Code of Regulations, Title 24, also referred to as the California Building Standards Code. This part is based on the provisions of the 2012 International Fire Code (model code—IFC) as developed by the International Code Council with necessary California amendments.

The adoption of the 2013 Edition of the California Fire Code (herein referred to as the "California Fire Code") is subject to the changes, amendments and modifications to said code as provided in this chapter, and certain provisions of the Long Beach Municipal Code, which shall remain in full force and effect as provided in this title. Such codes and code provisions shall constitute and be known as the Long Beach Fire Code. A copy of the California Fire Code, printed as code in book form, shall be on file in the office of the City Clerk.

Notwithstanding the provisions of the above referenced Fire Code(s), all new or increased fees for services provided pursuant to the Fire Code(s) shall not take effect until a resolution for such fees is adopted by the City Council pursuant to California Government Code Sections 66016 and 66020.

18.48.020 – Application.

The provisions of the model code (the International Fire Code), which are incorporated into the California Fire Code, are applicable to all occupancy groups and uses regulated by the model code. The amendments made by the State agencies to the model code and incorporated into the California Fire Code are applicable only to those occupancies or uses that the State agency making the amendments is authorized to regulate, as listed in Chapter 1 of the California Building Code adopted in Chapter 18.40. The Fire Prevention Bureau shall only enforce those amendments made by the following State agencies:

A. The Office of the State Fire Marshal (SFM) as specified in Section 1.11 of the California Fire Code.

18.48.030 – Amendments to the adopted codes.

The California Fire Code is amended and modified as set forth in Sections 18.48.040 through 18.48.770.

18.48.040 – Deleted phrases and sections.

The following phrases or sections are deleted from the California Fire Code, 2010 Edition:

CFC & IFC 108	Delete section.
CFC & IFC 308.1.4	Delete section.
CFC & IFC 308.1.6.2	Delete exception 4.
CFC & IFC 308.1.7	Delete section.
CFC & IFC 308.2	Delete exception 2.
CFC & IFC 308.3	Delete section.
CFC & IFC 311.2.2	Delete exceptions 1 and 2.
CFC & IFC Chapter 4	Delete entire chapter, except for those sections adopted by the SFM.
CFC & IFC 510.2	Delete section
CFC & IFC 805	Delete section

CFC & IFC 806	Delete section, except where adopted by the SFM.
CFC & IFC 807	Delete section, except where adopted by the SFM.
CFC & IFC 808	Delete section.
CFC & IFC 901.4.2	Delete the words "partial or".
CFC & IFC 903.4	Delete exceptions 4 and 5.
CFC & IFC 907.2.7.1	Delete section.
CFC & IFC 907.3.1	Delete exception 1.
CFC & IFC 913.4	Delete methods 3 and 4.
CFC & IFC Chapter 11	Delete entire chapter, except for those sections adopted by the SFM.
CFC & IFC Chapter 26	Delete entire chapter.
CFC & IFC 2701.1	Delete exception 8.
.	
CFC & IFC Appendix A	Delete entire appendix. CFC & IFC Appendix D Delete entire appendix.
CFC & IFC Appendix E	Delete entire appendix.
CFC & IFC Appendix F	Delete entire appendix.
CFC & IFC Appendix G	Delete entire appendix.
CFC & IFC Appendix I	Delete entire appendix. I
CFC & IFC Appendix J	Delete entire appendix.
CFC & IFC Appendix K	Delete entire appendix.

18.48.050 – CFC Chapter 1, Section 101.1—Title.

Section 101.1 of Chapter 1 of the California Fire Code is amended to read:

101.1 Title. These regulations shall be known as the Fire Code of the City of Long Beach, hereinafter referred to as" this code".

18.48.060 – CFC Chapter 1, Section 101.2—Scope.

Section 101.2 of Chapter 1 of the California Fire Code is amended by the addition of Subsection 6 to read:

6. The maintenance of fire protection and elimination of fire hazards on vessels moored, anchored, or berthed in waters under the jurisdiction of the City and/or within the boundaries of the Port of Long Beach.

18.48.070 – CFC Chapter 1, Section 101.2—Scope.

Section 101.2 of Chapter 1 of the California Fire Code is amended by the addition of Section 101.2.2 to read:

101.2.2 Supplemental rules and regulations. The Fire Code Official is authorized to make and enforce such rules and regulations for the prevention and control of fires, fire hazards and hazardous materials incidents as may be necessary from time to time to carry out the intent of this code. Three certified copies of such rules and regulations shall be filed with the City Clerk and shall take effect immediately thereafter. Additional copies shall be kept in the Fire Prevention Bureau Office. These rules and regulations shall be known as the Fire Prevention Requirements.

18.48.080 – CFC Chapter 1, Section 103.2—Appointment.

Section 103.2 of Chapter 1 of the California Fire Code is amended to read:

103.2 Appointment. The fire code official shall be appointed by the Fire Chief of the City of Long Beach; and the fire code official shall not be removed from office except for cause and after full opportunity to be heard on specific and relevant charges by and before the Fire Chief.

18.48.090 – CFC Chapter 1, Section 104.3—Right of entry.

Section 104.3 of Chapter 1 of the California Fire Code is amended by the addition of the following paragraph to read:

The Fire Code Official shall have the authority to direct inspection and insure compliance with the Long Beach Fire Code on all tankers and vessels at anchor or dockside in waters under the jurisdiction of the City and/or within the boundaries of the Port of Long Beach. All vessels shall comply with rules and regulations set forth in federal, State and local codes. Access to vessels shall be maintained at all times while the vessel is at anchor or dockside by use of proper brows or accommodation ladders.

18.48.100 – CFC Chapter 1, Section 104.6—Official records.

Section 104.6 of Chapter 1 of the California Fire Code is amended to read:

104.6 Official records. The Fire Code Official shall keep official records as required by Sections 104.6.1 through 104.6.4. Such official records shall be retained for not less than three years or for as long as the activity to which such records relate remains in existence, unless otherwise provided by other regulations.

18.48.110 – CFC Chapter 1, Section 105.1.2—Types of permits.

Section 105.1.2 of Chapter 1 of the California Fire Code is amended by revising the first sentence to read:

105.1.2 Types of permits. There shall be three types of permits as follows:

18.48.120 – CFC Chapter 1, Section 105.1.2—Types of permits.

Section 105.1.2 of Chapter 1 of the California Fire Code is amended by the addition of subsection 3 to read:

3. Inspection permit. An inspection permit allows the applicant to construct, enlarge, alter, repair, move, demolish, or change the occupancy of a building or structure, fire access roadways, smoke control systems, high piled storage, hazardous materials when not in "H" occupancies, and special systems as indicated in Section 18.48.560 of this code.

18.48.130 – CFC Chapter 1, Section 105.2—Application.

Section 105.2 of Chapter 1 of the California Fire Code is amended by the addition of Subsection 105.2.5 to read:

105.2.5 Declaration of intended use of occupancy. As required by the Fire Code Official, any or all owners of any occupancy may be required to record with the County Recorder of the County of Los Angeles a legal instrument of intended use. This legal instrument shall be called a Declaration of Intended Use, which shall specifically state by occupancy classification designations all intended uses of all portions of the occupancy and may not be modified or withdrawn without the approval of the Fire Code Official. Unapproved changes of occupancy or use can be cause for an immediate hearing before the Building Official and the Fire Code Official or their designees. Such hearing shall be conducted to rule on the revocation of the Certificate of Occupancy and the revocation of all permits issued to all owners, tenants, operators and occupants of all portions of the occupancy. The Declaration of Intended Use shall be binding on all present and future owners, tenants, operators and occupants.

105.2.5.1 Existing occupancy modification. Any existing occupancy that is modified in any manner where the modifications exceed 1% of the total floor area of the smallest aggregate individual floor area or tier area in any twelve month period, shall require the filing of a Declaration of Intended Use.

105.2.5.2 Filing. A certified copy of the recorded Declaration of Intended Use shall be filed with the Building Official and the Fire Code Official before any Certificate of Occupancy and/or any permits are issued to any or all owners, operators or occupants of the occupancy.

18.48.140 – CFC Chapter 1, Section 105.3.1—Expiration.

Section 105.3.1 of Chapter 1 of the California Fire Code is amended to read:

105.3.1 Expiration. Every construction and inspection permit issued shall be valid for a period of two (2) years from the date after its issuance; provided however that every permit issued shall expire on the one-hundred eightieth (180th) day after its issuance if the work on the site authorized by such permit has not commenced or has not been inspected; or shall expire whenever the Fire Code Official determines the work authorized by such permit has been suspended, discontinued or abandoned or has not been inspected for a continuous period of one hundred and eighty (180) days after the time the work has commenced.

18.48.150 – CFC Chapter 1, Section 105.6—Required operational permits.

Section 105.6 of Chapter 1 of the California Fire Code is amended to read:

105.6 Required operational permits. The Fire Code Official is authorized to issue operational permits for the operations set forth in Chapter 1, Sections 105.6.1 through 105.6.61.

18.48.160 – CFC Chapter 1, Section 105.6—Required operational permits.

Section 105.6 of Chapter 1 of the California Fire Code is amended by the addition of Sections 105.6.48 through 105.6.61 to read:

105.6.48 Airport, heliport and helistop. An operational permit is required to operate an airport, heliport and helistop.

105.6.49 Battery systems. An operational permit is required to operate stationary lead-acid battery systems having a liquid capacity greater than 50 gallons.

105.6.50 Bulk storage facility. Above ground bulk storage of flammable and combustible liquids for each 225,000 BBL or major fraction thereof.

105.6.51 Educational occupancy. An operational permit is required to operate any occupancy classified as E and E-Daycare in all commercial properties. Also in residentialproperties with more than 8 children.

105.6.52 Flammable and combustible liquids. Outside above ground storage of flammable and combustible liquids, more than 60 gallons, for each 6,000 gallons or major fraction thereof.

105.6.53 General use permit. An operational permit is required to maintain, store, use or handle materials, or to conduct processes which may produce conditions hazardous to life or property, or to install equipment used in connection with such processes, or to carry on any activity which in the opinion of the Fire Code Official may be hazardous to life and property and which is not specifically covered by Section 105.6

105.6.54 High-rise. An operational permit is required to operate any high-rise structure.

105.6.55 Hot air balloon. An operational permit is required to launch any hot air balloon which has its lifting power provided by an open flame device. A plan shall be submitted for approval showing distances from buildings and other possible hazards, as determined by the Fire Code Official, before the permit is issued.

105.6.56 Institutional occupancy. An operational permit is required to operate any occupancy with over 6 occupants classified as an I-1, I-2, I-3 or any R occupancy providing care.

105.6.57 Marine service station. An operational permit is required to operate a marine service station.

105.6.58 Radioactive material. An operational permit is required to store or handle radioactive materials.

105.6.59 Recreational fire. An operational permit is required for a recreational fire.

105.6.60 Residential occupancy. An operational permit is required to operate a residential occupancy with three or more units.

Exception. High-rise. See Section 105.6.55.

105.6.61 Rifle range. An operational permit is required to operate a rifle range.

18.48.170 – CFC Chapter 1, Section 105.6.14—Explosives.

Section 105.6.14 Exception, of Chapter 1 of the California Fire Code is amended by replacing "Section 5606" with "Chapter 56".

18.48.180 – CFC Chapter 1, Section 105.7—Required construction permits.

Section 105.7 of Chapter 1 of the California Fire Code is amended to read:

105.7 Required construction and inspection permits. The Fire Code Official is authorized to issue construction and inspection permits for work as set forth in Chapter 1, Sections 105.7.1 through 105.7.21.

18.48.190 – CFC Chapter 1, Section 105.7—Required construction and inspection permits.

Section 105.7 of Chapter 1 of the California Fire Code is amended by the addition of Sections 105.7.17 through 105.7.23 to read:

105.7.17 Buildings and structures. An inspection permit is required to construct, enlarge, alter, repair, move, demolish, or change the occupancy of a building or structure.

105.7.18 Automatic sprinkler systems. A construction permit is required for the installation or modification of an automatic sprinkler system, including all interior and exterior piping, valves, or appurtenances. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

105.7.19 Smoke control system. An inspection permit is required for the installation or modification of a smoke control system. Maintenance performed in accordance with this code is not considered a modification and does not require a permit.

105.7.20 Fire Department emergency access and building emergency egress. A construction permit is required for the construction or modification of a Fire Department emergency access and building emergency egress.

105.7.21 High piled storage. A construction permit is required for the construction or modification of a high piled storage area inside, or outside of any building or structure.

105.7.22 Hazardous materials, when not in "H" occupancies. A construction permit is required for the installation or modification of a hazardous material, when not in "H" Occupancies.

105.7.23 Special systems. A construction permit is required for the construction or modification of vapor recovery systems, dust collection systems, compressed or liquefied gas manifolds, and other special systems requiring Fire Department approvals.

18.48.200 – CFC Chapter 1, Section 107.5—Overcrowding.

Section 107.5 of Chapter 1 of the California Fire Code is amended by the addition of Section 107.5.1 to read:

107.5.1 Occupant count. The supervisor of each place of assembly shall have an effective system to keep count of the number of occupants present in the assembly area. If at any time, the Fire Code Official determines that an accurate count of occupants is not being maintained, the occupancy shall be cleared until an accurate count can be made.

18.48.210 – CFC Chapter 1, Section 109.4—Violation penalties.

Section 109.4 of Chapter 1 of the California Fire Code is amended to read:

109.4 Violation penalties. Persons who shall violate a provision of this code or shall fail to comply with any of the requirements thereof or who shall erect, install, alter, repair or do work in violation of the approved construction documents or directive of the Fire Code Official, or of a permit or certificate used under the provisions of this code, or who enters a building that has been declared "unsafe" and ordered "evacuated", shall be guilty of a misdemeanor .

A person is guilty of a separate offense each day during which he or she commits, continues, or permits a violation of any provision of, or any order, rule, or regulation made pursuant to, this chapter.

18.48.220 – CFC Chapter 1, Section 111.4—Failure to comply.

Section 111.4 of Chapter 1 of the California Fire Code is amended to read:

111.4 Failure to comply. Any person who shall continue any work after having been served with a stop work order, except such work as that person is directed to perform to remove a violation or unsafe condition, shall be guilty of a misdemeanor .

A person is guilty of a separate offense each day during which he or she commits, continues, or permits a violation of any provision of, or any order, rule, or regulation made pursuant to, this chapter.

18.48.230 – CFC Chapter 1, Section 113.2—Fees.

Section 113 of Chapter 1 of the California Fire Code is amended by the addition of Sections 113.6, 113.7 and 113.8 to read:

113.6 Operational permit fees. The fee set forth and established for the particular activity by a resolution of the City Council shall accompany all operational permits required pursuant to the provisions of this code.

113.7 Construction and inspection permit fees. Construction and inspection permit fees shall be paid at the time of the permit issuance. In addition to the permit fee, the applicant shall pay a plan check fee. The fee set forth and established for the particular activity by a resolution of the City Council shall accompany all construction and inspection permits required pursuant to the provisions of this code.

113.8 Reinspection fee. When the Fire Code Official or his representative arrives at an occupancy to inspect for compliance with a written order or notice and is prevented from making the inspection due to inaccessibility of the area, or finds that compliance with the written order has not been made or other circumstances, or when an inspection is scheduled for operational or construction permits and

the permittee is not ready for inspection and does not inform the Fire Code Official or his representative two hours prior to the scheduled inspection, a reinspection fee may be assessed.

18.48.240 – CFC Chapter 1—Administration.

Chapter 1 of the California Fire Code is amended by the addition of Section 114 to read:

SECTION 114 – RESPONSIBILITY

114.1 Responsibility for costs. Persons who personally or through another willfully, negligently, or in violation of law set a fire, allow a fire to be set, allow a fire kindled or attended by them to escape from their control, allow any hazardous materials to escape from their control, neglect to properly comply with any written notice of the Fire Code Official, or willfully or negligently allow the continuation of a violation of this code and amendments thereto are liable for the expenses of fighting the fire, for the expenses of any investigation, or for the expenses incurred during a hazardous materials incident. Such expenses shall be a charge against that person. Such charge shall constitute a debt of such person, and is collectible by the City in the same manner as in the case of an obligation under a contract, expressed or implied and a lien may be attached to the involved property.

114.2 Reporting injuries caused by fires. Any person, firm, corporation, or agency that maintains a hospital, pharmacy, or any other medical or first aid service shall immediately report to the Fire Code Official any person suffering from any fire-related injury. The report shall be made both by telephone and in writing, and shall include the name and address of the injured person, the person's whereabouts, and the character and extent of the person's injuries.

18.48.250 – CFC Chapter 2, Section 202—General definitions.

Section 202 of Chapter 2 of the California Fire Code high-rise structure definition, Subsection 2 is amended to read:

"High-rise structure" means every building of any type of construction or occupancy having floors used for human occupancy located more than seventy five (75) feet above the lowest floor level having building access (see California Building Code, Section 403) or the lowest level of Fire Department vehicle access, whichever is more restrictive, except buildings used as hospitals as defined in Section 1250 of the California Health and Safety Code.

18.48.260 – CFC Chapter 2, Section 202—General definitions.

Section 202 of Chapter 2 of the California Fire Code is amended by revising the following definitions to read:

Fire Chief. The chief officer of the fire department serving the jurisdiction.

Fire Code Official. The fire marshal or his or her designated representatives.

18.48.270 – CFC Chapter 2, Section 202—General definitions.

Section 202 of Chapter 2 of the California Fire Code is amended by adding the following definitions to read:

Boat Yard. A facility for construction, repair, storage, launching, berthing, and fueling of small craft.

Small Craft. Vessels under sixty-five (65) feet in length.

18.48.280 – CFC Chapter 3, Section 304.1—Waste accumulation prohibited

Section 304.1 of Chapter 3 of the California Fire Code is amended by the addition of Section 304.1.4 to read:

304.1.4 Alleys to be kept clean. It shall be unlawful for any person owning or occupying or having possession or control of any property bordering on any public alley in the City to fail, refuse or neglect to keep the portion of such alley between the center line of the alley and the property line of such property free from garbage, debris, rubbish, combustible materials, flammable liquids, hazardous materials and other obstructions.

18.48.290 – CFC Chapter 3, Section 307.1.1—Prohibited open burning.

Section 307.1.1 of Chapter 3 of the California Fire Code is amended to read:

307.1.1 Prohibited open burning. Open burning shall be conducted in accordance with Section 307 and as required by other governing agencies regulating emissions. No person shall conduct open burning for any purposes except:

1. When such fire is set or permission for such fire is given in the performance of the official duty of any Public Safety Officer, and the fire in the opinion of such officer is necessary for the purpose of the prevention of a fire hazard which cannot be abated by any other means or for the purpose of the instruction of public employees in the methods of fighting fire.

2. When such fire is set on property used for industrial or institutional purposes to instruct employees in methods of fighting fire.

3. The Fire Code Official has issued an open burning permit allowing open burning for a specific purpose.

18.48.300 – CFC Chapter 3, Section 307.4.2—General.

Section 307.4.2 of Chapter 3 of the California Fire Code is amended by the addition of Section 307.4.2.1 to read:

307.4.2.1 General. Recreational fires shall be in accordance with Section 307. Recreational fires shall not be conducted unless the Fire Code Official has issued a permit permitting such fires. For recreational fires this permit shall be issued without cost.

18.48.310 – CFC Chapter 3, Section 312.2—Posts.

Section 312.2 of Chapter 3 of the California Fire Code is amended by the revision of Subsection (4) and the addition of Subsections (6) and (7) to read:

(4) Set the top of the posts not less than 4 feet above ground.

(6) Where heavy truck traffic is anticipated guard posts shall be a minimum of 6 inches in diameter, or as required by the Fire Code Official, concrete filled, located not less that 5 feet from the protected object, and have the tops of the posts not less than 4 feet above ground.

(7) Guard posts shall be painted safety yellow.

18.48.320 – CFC Chapter 4, Section 403—Public Assemblages and Events.

Section 403 of Chapter 4 of the California Fire Code is amended by the addition of Section 403.4 to read:

403.4 Fire safety officer. When in the opinion of the Fire Code Official a place of assembly or any other place where people congregate, because of the number of persons, or nature of performance, exhibition, display, contest or activity or any other type of activity the Fire Code Official determines it is essential for public safety, the owner, agent, lessee or responsible party shall pay for Long Beach Fire Department Fire Safety Officers to be present.

18.48.330 – CFC Chapter 5, Section 503.2.1—Dimensions.

Section 503.2.1 of Chapter 5 of the California Fire Code is amended to read:

503.2.1 Dimensions. Fire apparatus access roads shall have an unobstructed width of not less than 26 feet, and an unobstructed vertical clearance of 15 feet.

18.48.340 – CFC Chapter 5, Section 503.2.4—Turning radius.

Section 503.2.4 of Chapter 5 of the California Fire Code is amended to read:

503.2.4 Turning radius. Fire apparatus access roads shall have a minimum inside turning radius of 28 feet.

18.48.350 – CFC Chapter 5, Section 505.1—Address numbers.

Section 505.1 of Chapter 5 of the California Fire Code is amended by the addition of Sections 505.1.1 and 505.1.2 to read:

505.1.1 Rear address numbers. All buildings on the property of the Long Beach Airport, and all multi-tenant buildings within the City, shall be provided with address numbers and/or suite numbers on the rear doors to each tenant space.

505.1.2 Address illumination. Address numbers on the street or road frontage of the building, shall be internally or externally illuminated. In addition, buildings on the Long Beach Airport property shall have the rear address numbers internally or externally illuminated, in addition to the street or road frontage addresses.

18.48.360 – CFC Chapter 5, Section 506.1—Where required.

Section 506.1 of Chapter 5 of the California Fire Code is amended by the addition of Sections 506.1.3 and 506.1.4 to read:

506.1.3 Identification. When required, keys shall be clearly tagged as to the area and/or location they serve and a minimum of three separate sets shall be located within the key box.

506.1.4 Gates. Vehicular or pedestrian gates obstructing required fire access shall be provided with locking devices and/or over-ride mechanisms, which have been approved by the Fire Code Official of the City of Long Beach.

18.48.370 – CFC Chapter 5—Fire Service Features.

Chapter 5 of the California Fire Code is amended by the addition of Section 511 to read:

SECTION 511 – EMERGENCY HELICOPTER LANDING FACILITY

511.1 General. Each high-rise building shall have an emergency helicopter landing facility located on the roof of the building in an area approved by the Fire Department. The landing facility shall be for emergency operations only and installed in accordance with Section 511.

511.2 Approaches. A landing glide slope angle determined by a ratio of eight feet horizontal distance for every one foot of vertical clearance is required. Two such approaches shall be available at least ninety degrees removed from each other.

511.3 Landing and takeoff area. A clear, unobstructed landing and takeoff area is required with a minimum dimension of one hundred feet by one hundred feet and a touchdown area having a minimum dimension of fifty feet by fifty feet.

511.4 Roof perimeter. If the roof has no parapet wall, a substantial fence or safety net shall be provided around the perimeter of the roof in such a manner that it will not restrict or reduce the required landing and takeoff area.

511.5 Wind device. An approved wind-indicating device shall be provided.

511.6 Standpipe. A Class II wet standpipe shall be provided and located in such a manner that it will not restrict or reduce the required landing and takeoff area.

511.7 Marking. The rooftop shall be marked by an emergency marker as required by the Fire Code Official.

511.8 Communication system. An extension of the building's emergency communication system shall extend to the roof, and shall consist of a head set and microphone in a cabinet.

18.48.380 – CFC Chapter 9, Section 901.4—General.

Section 901.4 of Chapter 9 of the California Fire Code is amended by the addition of Section 901.4.5 to read:

901.4.5 Protection of fire protection systems and equipment. Fire protection systems and equipment subject to possible vehicular damage shall be adequately protected with guard posts in accordance with Section 312 Vehicle Impact Protection, and modifications adopted under this code.

18.48.390 – CFC Chapter 9, Section 901.4.2—Nonrequired fire protection systems.

Section 901.4.2 of Chapter 9 of the California Fire Code is amended to read:

901.4.2 Nonrequired fire protection systems. Any fire protection system not required by this code or the California Building Code shall be furnished for complete protection and meet all requirements of this code and the California Building Code.

18.48.400 – CFC Chapter 9, Section 901.4.3—Fire areas.

Section 901.4.3 of Chapter 9 of the California Fire Code is amended to read:

901.4.3 Fire areas. The total fire area of buildings for this section shall be computed without regard to fire barriers and floors of less than four-hour fire resistive construction without openings.

18.48.410 – CFC Chapter 9, Section 903.1—General.

Section 903.1 of Chapter 9 of the California Fire Code is amended by the addition of Sections 903.1.2 through 903.1.4 to read:

903.1.2 Control valves. Fire Sprinkler system control valves shall be located within stairway number 1, and at the discretion of the Fire Code Official, shall be provided on all levels of buildings above or below grade.

903.1.3 Existing buildings. An automatic sprinkler system shall be installed in all existing occupancies as required by this section, if any of the following occurs:

1. There is a change in occupancy classification to one that would require an automatic sprinkler system per the Fire Code in the new occupancy.

2. The Fire Code Official determines that an automatic sprinkler system is required to provide a minimum level of public safety.

903.1.4 Partial automatic sprinkler systems. Partial automatic sprinkler systems are not allowed. Where automatic sprinkler systems are required to be installed by this section, or by any other sections in this code, or any nationally recognized standards, or are electively installed, the automatic sprinkler system shall be installed throughout the entire building, unless a four-hour fire resistive constructed wall, with no openings, separates the areas.

18.48.420 – CFC Chapter 9, Section 903.2—Where required.

Section 903.2 of Chapter 9 of the California Fire Code is amended by the addition of the following paragraph to read:

All new commercial, industrial and non-residential buildings that require two or more exits or that are greater than 3,000 sq. ft. shall be protected by an automatic sprinkler system. This shall not apply to existing buildings.

18.48.430 – CFC Chapter 9, Section 903.2.8—Group R.

Section 903.2.8 of Chapter 9 of the California Fire Code is amended by the addition of the following paragraphs to read:

All new multi-family (3 or more units) residential, hotels, motels and similar buildings shall be protected by an automatic sprinkler system.

All new single-family dwellings and duplexes greater than 4,000 sq. ft., or more than two-stories in height shall be protected by an automatic sprinkler system.

18.48.440 – CFC Chapter 9, Section 903.3.5—Water supplies.

Section 903.3.5 of Chapter 9 of the California Fire Code is amended by the addition of Section 903.3.5.3 to read:

903.3.5.3 Hydraulic calculations margin. Fire protection system hydraulic calculations shall include a 10 percent safety margin between the available water supply and the required system supply.

18.48.450 – CFC Chapter 9, Section 903.4—Sprinkler system supervision and alarms.

Section 903.4 of Chapter 9 of the California Fire Code is amended by the addition of Section 903.4.4 to read:

903.4.4 Remote annunciator. A remote annunciator shall be provided at the main entrance, the first suite in a multi suite building, or in a location as approved by the fire code official. The remote annunciator shall have the capability to silence and reset the system via a key located in the Knox box, or other approved means.

18.48.460 – CFC Chapter 9, Section 903.4.1—Monitoring.

Section 903.4.1 of Chapter 9 of the California Fire Code is amended by the addition of Section 903.4.1.1 to read:

903.4.1.1 Signal reporting. All signals when automatically transmitted to the facilities noted in 903.4.1 and to the remote annunciator shall be transmitted with each devices specific location, type and address.

18.48.470 – CFC Chapter 9, Section 903.4.2—Alarms.

Section 903.4.2 of Chapter 9 of the California Fire Code is amended by the addition of the following sentence to read:

The exterior alarm device shall be a horn and strobe device, located on the address side of the building, closest to the location of the fire department connection.

18.48.480 – CFC Chapter 9, Section 903.4.2—Alarms.

Section 903.4.2 of Chapter 9 of the California Fire Code is amended by the addition of Sections 903.4.2.1 and 903.4.2.2 to read:

903.4.2.1 Alarms. At least one (1) additional horn and strobe device is required on the interior of a building at the main entrance or in a location as approved by the fire code official.

903.4.2.2 Manual pull station. At least one (1) manual pull station is required on the interior of a building at the main entrance or in a location as approved by the fire code official.

18.48.490 – CFC Chapter 9, Section 905.1—General.

Section 905.1 of Chapter 9 of the California Fire Code is amended by the addition of Section 905.1.1 to read:

905.1.1 Design. All standpipe systems, except Class II systems, shall be designed to deliver a minimum of 125 psi at the discharge of all standpipe outlets.

18.48.500 – CFC Chapter 9, Section 905.4 (1) —Location of Class I standpipe hose connection.

Section 905.4 (1) of Chapter 9 of the California Fire Code is amended to read:

1. In every required required stairway, a hose connection shall be provided for each floor level above or below grade. Hose connection shall be located at the floor landing of each floor, unless otherwise approved by the fire code official. See Section 909.20.3.2 for additional provisions in smokeroof enclosures.

18.48.510 – CFC Chapter 9, Section 907.1—General.

Section 907.1 of Chapter 9 of the California Fire Code is amended by the addition of Sections 907.1.6, 907.1.7 and 907.1.9 to read:

907.1.6 Voluntary. Any fire alarm system not required by this code or the California Building Code shall be furnished for complete protection and meet all requirements of this code and the California Building Code, unless approved by the fire code official.

907.1.7 Evacuation. Buildings over 3 stories may be required to provide building evacuation based on the floor of alarm, the floor above and the floor below, in lieu of a general alarm, at the discretion of the Fire Code Official.

907.1.8 Control panels. Fire alarm system control panels, including sprinkler monitoring panels, shall be utilized for connecting and supervising fire alarm and/or fire related equipment only. Security or similar devices shall not be connected to a fire alarm or sprinkler monitoring control panel. The use of control panels capable of this feature is subject to the following:

1. The owner of the facility where the panel is being installed shall provide an original letter, on company letterhead, to the Long Beach Fire Department stating that not now, nor in the future, will security or similar equipment be connected to the fire alarm or sprinkler monitoring control panel.

2. New and/or existing control panels installed after the adoption of this ordinance found to be in violation of this requirement shall be subject to corrective action, as determined by the Fire Code Official.

907.1.9 Remote annunciator. A remote annunciator shall be provided at the main entrance, the first suite in a multi suite building, or in a location as approved by the fire code official. The remote annunciator shall have the capability to silence and reset the system via a key located in the Knox box, or other approved means.

18.48.520 – CFC Chapter 9, Section 907.3.1 — Duct smoke detectors.

Section 907.3.1 of Chapter 9 of the California Fire Code is amended to read:

907.3.1 Duct smoke detectors. Smoke detectors installed in ducts shall be listed for the air velocity, temperature and humidity present in the duct. Duct smoke detectors shall be connected to the building's fire alarm system or sprinkler monitoring system, when one is installed. Activation of a duct smoke detector shall initiate a visible and audible supervisory signal at a constantly attended location and shall perform the intended fire safety function in accordance with this code and the California Mechanical Code. Duct smoke detectors shall not be used as a substitute for required open area detection.

18.48.530 – CFC Chapter 9, Section 907.3.1 Exception 2— Duct smoke detectors.

Section 907.3.1 Exception 2 of Chapter 9 of the California Fire Code is amended to read:

2 In occupancies not required to be equipped with a fire alarm or sprinkler monitoring system, actuation of a duct smoke detector shall activate a visible and and audible signal in an approved location. Duct smoke detector trouble condition shall activate a visible or audible signal in an approved location and shall be identified as an air duct detector trouble.

18.48.540 – CFC Chapter 9, Section 907—Fire alarm and detection systems.

Section 907 of Chapter 9 of the California Fire Code is amended by the addition of Sections 907.10 and 907.10.1 to read:

907.10 Fire alarm upgrade. All existing multi-family residential, hotels, motels and high-rise buildings shall upgrade the existing fire alarm system to current code, at the time of replacement of the existing non-functioning fire alarm control panel.

907.10.1 Firefighter smoke removal system. A natural or mechanical Fire Department approved ventilation system for the removal of products of combustion shall be provided above and below grade on every level, at the discretion of the Fire Code Official, and shall consist of one of the following:

1. Panels or windows in the exterior walls which can be opened remotely from an approved location other than the fire floor. Such venting facilities shall be provided at the rate of twenty square feet per lineal feet of exterior wall in each story and shall be distributed around the perimeter at not

more than fifty-foot intervals. Such windows or panels and their controls shall be clearly identified. Exception: When a complete automatic fire extinguishing system is installed, windows or panels manually openable from within the fire floor or approved fixed tempered glass may be used in lieu of the remotely operated openable panels and windows. Such windows shall be clearly identified and shall be of the size and spacing called for above.

2. When a complete and approved automatic fire extinguishing system is installed, the mechanical air-handling equipment may be designed to accomplish smoke removal. Under fire conditions, the return and exhaust air shall be moved directly to the outside without recirculation to other sections of the building. The air-handling system shall provide a minimum of one exhaust air change each ten minutes for the area involved.

3. The firefighter smoke exhaust panel shall be located at the main entrance to the building or as required by the Fire Code Official, and shall be permanently labeled "Fire Department Smoke Evacuation Use Only".

4. Any other design which will produce equivalent results as approved by the Fire Code Official.

5. Operation shall be by use of Knox key switch.

18.48.550 – CFC Chapter 9, Section 910.3.2.2—Sprinklered buildings.

Section 910.3.2.2 of Chapter 9 of the California Fire Code is amended by the addition of the following sentence to read:

Smoke and heat vents fusible links shall be designed at a minimum of 100 degrees above the temperature rating of the fire sprinklers.

18.48.560 – CFC Chapter 9, Section 912.1—Installation.

Section 912.1 of Chapter 9 of the California Fire Code is amended by the addition of Section 912.1.1 to read:

912.1.1 Design. Fire Department connections, where required, shall be provided with a minimum number of two (2) 2-1/2 inch inlets, regardless of the size of the fire sprinkler system. Where fire protection system demands are in excess of 1,000 gpm a minimum of four (4) 2-1/2 inch inlets shall be provided.

Hazardous locations, high-rise buildings or where fire protection system demands are in excess of 2,000 gpm, a second fire Department connection utilizing four (4) 2-1/2 inch inlets may be required at the discretion of the Fire Code Official.

18.48.570 – CFC Chapter 9, Section 912.2.1—Visible location.

Section 912.2.1 of Chapter 9 of the California Fire Code is amended by the addition of the following paragraph to read:

Fire Department connections shall be located on the address side of the building or structure and shall be within 150 feet of a public fire hydrant.

18.48.580 – CFC Chapter 9, Section 912.3—Access.

Section 912.3 of Chapter 9 of the California Fire Code is amended by the addition of the following paragraph to read:

Fire Department connections, where located in landscaping or other similar areas, shall be provided with a minimum 3-foot concrete pad around the Fire Department connection, and an approved concrete pathway leading to the Fire Department connection.

18.48.590 – CFC Chapter 10, Section 1003—General means of egress.

Section 1003 of Chapter 10 of the California Fire Code is amended by the addition of Section 1003.8 to read:

1003.8 Protection of means of egress. When the Fire Code Official determines that means of egress require protection from possible vehicular damage, crash posts shall be installed in accordance with Section 312 Vehicle Impact Protection.

18.48.600 – CFC Chapter 10, Section 1009.16—Stairway to roof.

Section 1009.16 of Chapter 10 of the California Fire Code is amended to read:

1009.16 Stairway to roof. In buildings located four or more stories in height above grade plane, one stairway shall extend to the roof surface, unless the roof has a slope steeper than four units vertical in 12 units horizontal (33-percent slope).

18.48.610 – CFC Chapter 10, Section 1009.16—Stairway to roof.

Section 1009.16 of Chapter 10 of the California Fire Code is amended by addition of Section 1009.16.1.1 to read:

1009.16.1.1 Ladder. A fixed ladder shall be provided for access to the hatch or trap door.

18.48.620 – CFC Chapter 10, Section 1009.16—Stairway to roof.

Section 1009.16 of Chapter 10 of the California Fire Code is amended by the addition of Section 1009.16.1.2 to read:

1009.16.1.2 Stairway 1. When a stairway to the roof is required it shall be designated Stairway 1.

18.48.630 – CFC Chapter 10, Section 1028.12—Seat stability.

Section 1028.12 of Chapter 10 of the California Fire Code is amended by the addition of the following paragraph to read:

This does not apply to temporary situations, such as, tents or temporary public assemblies.

18.48.640 – CFC Chapter 23, Section 2303.1.1—Protection of dispensing devices.

Section 2303.1.1 of Chapter 23 of the California Fire Code is amended by the addition of the following paragraph to read:

Dispensing devices shall be protected against physical damage from vehicles by mounting on a concrete island 6 inches or more in height or by other approved methods.

18.48.650 – CFC Chapter 23, Section 2306.7.9.2—Vapor processing system.

Section 2306.7.9.2 of Chapter 23 of the California Fire Code is amended by the addition of Sections 2306.7.9.2.5 through 2306.7.9.2.10 to read:

2306.7.9.2.5 Component design. If a component is likely to contain a flammable vapor/air mixture under operating conditions and can fail in a manner, which could ignite the mixture, the component

shall be designed to withstand an internal explosion without failure to the outside and protected to prevent flame propagation to other parts of the system.

2306.7.9.2.6 Fire checks. Approved fire checks or other positive means of automatic isolation of underground storage tanks shall be installed in vapor-return piping to prevent a flashback from reaching the underground tanks. Such devices also shall be installed in all vapor/air piping as close as practical to each burner or group of burners in a vapor incineration unit, and in all vapor-transfer piping as close as practical to refrigeration, absorption or similar types of processing equipment.

2306.7.9.2.7 Vent termination. Vents from vapor-processing units shall not be less than 12 feet above adjacent ground level and not less than 8 feet above the processing unit itself. Vent outlets shall be directed and located such that flammable vapors will not accumulate, travel to an unsafe location or enter buildings.

2306.7.9.2.8 Electrical equipment. Electrical equipment shall be in accordance with the California Electrical Code.

2306.7.9.2.9 Site control. Fences, bumper posts or other control measures shall be provided where necessary to protect from tampering, trespassing and vehicle traffic. The area within 15 feet of the installed vapor-processing unit shall be kept clear of combustible materials.

2306.7.9.2.10 Maintenance, tests and inspection. Vapor-recovery and vapor-processing equipment shall be subject to periodic maintenance, tests and inspections. Maintenance, tests and inspections set forth in the listing document, or other tests required by the Fire Code Official, shall be the responsibility of the owner or occupant of the premises on which such equipment is located.

Maintenance on vapor-recovery system or vapor-processing equipment shall be performed by the manufacturer of the affected equipment, or an equally qualified person. Written records of maintenance, tests, inspections and the results and recommendations shall be maintained on the premises where the equipment is located, and shall be made available to the Fire Code Official on request.

Incidents involving leaks, fires, explosions, overheating or requiring shutting down equipment, other than for routine maintenance or tests, shall be immediately reported to the Fire Department.

18.48.660 – CFC Chapter 35—Welding and other hot work.

Chapter 35 of the California Fire Code is amended by the addition of Sections 3510 and 3511 to read:

SECTION 3510 – WELDING AND CUTTING ABOARD VESSELS

3510.1 General. No person shall perform any welding or cutting operations aboard any vessel moored or anchored in the waterfront facilities under the jurisdiction of the Long Beach Harbor Department without first complying with the regulations of the Port of Long Beach Tariff and notifying the Fire Department.

3510.2 Conditions. No person shall perform any welding or cutting operations aboard any vessel moored, anchored or in drydock or on any waterfront facility within the corporate limits of the City, which are not included and regulated in Section 3510.1 above, at any yacht moorage, shipyard, boat landing or marina without first notifying and receiving permission from the proper authority as hereinafter defined:

1. Proper authority for a yacht moorage, shipyard, boat landing or marina shall mean the manager or owner. Prior to giving permission to do welding or cutting, a permit shall be obtained from the Fire Department.

2. Proper authority for any area not covered in (1) shall be the Fire Code Official.

3510.3 Special hazards. Welding or cutting shall be prohibited aboard any vessel in congested moorage, except as approved by the Fire Code Official or in an approved shipyard site where adequate fire protection, as approved by the Fire Code Official, is provided. Vessels shall be located in such a manner as to facilitate their quick removal in case of fire or other emergency. If an unusual hazard exists which endangers life or property, the Fire Code Official may require sufficient and competent personnel to be immediately available to move the vessel in the event of an emergency.

3510.4 Access. Brows, gangways, ladders or other facilities shall be provided for prompt and easy access to a vessel upon which welding or cutting is being conducted. A Jacobs ladder or other suitable equipment may be required to be rigged on the offshore side in such a manner that it can be immediately lowered for a boarding party in the event of an emergency.

3510.5 Prohibitions. Welding and cutting prohibited:

1. Within two hundred feet of any vessel or any transfer apparatus on any waterfront facility while transferring any liquefied petroleum gas, liquefied natural gas, or flammable liquid between such vessel and/or waterfront facility.

2. Within one hundred feet of any vessel or any transfer apparatus on any waterfront facility while transferring any combustible liquid between such vessel and/or waterfront facility.

3510.6 Dangerous conditions. At any time the General Manager of the Port, the Director of the Marine Division, or their authorized assistants, the Master of the vessel, the Fire Code Official, or any other responsible person is aware of a dangerous condition existing during welding or cutting operations, he/she shall immediately cause such operations to be discontinued. Operations shall not be resumed until the danger is abated, and the Fire Department is satisfied that appropriate safety levels are being provided.

3510.7 Cylinder locations. Compressed gas and liquefied petroleum gas cylinders when being used aboard a vessel shall not be placed below decks or under overhanging decks except by permission of the Fire Code Official.

3510.8 Acetylene generators. The use of acetylene generators on vessels or waterfront facilities is prohibited.

3510.9 National standards. All welding and cutting operations covered by this section shall also comply with the requirements of other applicable sections of these regulations and with N.F.P.A. No. 303, "Fire Protection Standard for Marinas and Boatyards."

SECTION 3511 – TESTS AND RECORDS REQUIRED

3511.1 General. Wherever tests are required to determine the safety of welding and cutting operations, records shall be maintained to the satisfaction of the Fire Code Official. Additional tests and inspections shall be required to insure that safe conditions are maintained and to determine that welding or cutting operations may be conducted with safety under the following conditions:

1. If the work has been delayed for a prolonged period of time.

2. When transfer of ballast or manipulation of valves or closure equipment tends to alter conditions in pipelines, tanks or compartments subject to gas accumulation.

3. If there is removal or disturbance of hatches or separations from adjoining compartments aboard vessels.

4. If vessels or containers are moved from one area to another.

3511.2 Hazardous conditions. If at any time conditions become hazardous, the person making the test or inspection shall immediately notify the responsible person of the hazard. The responsible person shall immediately cause all operations to stop and remain stopped until the hazard is abated, and the Fire Department is satisfied that appropriate safety levels are being provided.

18.48.670 – CFC Chapter 36, Section 3604—Fire protection equipment.

Section 3604 of Chapter 36 of the California Fire Code is amended by the addition of Section 3604.7 to read:

3604.7 Cabinets. Cabinets for the protection of fire protection equipment shall be of non-corrosive materials.

18.48.680 – CFC Chapter 48, Section 4807.1—Fire safety officers.

Section 4807.1 of Chapter 48 of the California Fire Code is amended to read:

4807.1 Where permits are required by the fire code, a requirement for standby fire safety officers shall be determined by the fire code official on a case-by-case basis.

18.48.690 – CFC Chapter 56, Section 5601—General.

Section 5601 of Chapter 56 of the California Fire Code is amended by the addition of Sections 5601.2 and 5601.3 to read:

5601.2 Financial responsibility. Before a permit required by Chapter 1, Section 105.6.14 or 105.6.36 is issued, the permittee shall file with the Fire Code Official a certificate of insurance issued by an insurance company authorized to transact business in the State of California. Such certificate shall certify that the operations under the permit are covered by the policy. The insurance coverage shall not be less than One Million Dollars for injury or death of one person, One Million Dollars for injury or death to more than one person and One Million Dollars for damage to property in any one occurrence. Should the Fire Code Official decide that the activities of the permittee should be supervised by employees of the Fire Department, then the permittee shall furnish to the Fire Code Official the original or certified copy of the policy of insurance in the amounts above provided. The City of Long Beach, its officers, agents, employees and volunteers shall be named parties insured under said policy insofar as the activities of such officers and employees pertain to operations of permittee under the permit. The policy of insurance shall be approved by Risk Management as to sufficiency and the City Attorney as to form. Upon approval, the policy of insurance will be returned if permittee files a certificate of insurance issued by the insurance carrier. No insurance will be required if the permittee is a public agency.

5601.3 Qualifications. The handling and firing of explosives shall be performed only by authorized pyrotechnicians licensed by the State of California, or by employees who are at least 18 years of age under the direct personal supervision of the authorized blaster.

18.48.700 – CFC Chapter 56, Section 5608—Fireworks Display.

Section 5608 of Chapter 56 of the California Fire Code is amended by the addition of Sections 5608.2, 5608.3 and 5608.4 to read:

5608.2 Prohibition. Except as hereinafter provided, it shall be unlawful for any person to possess, store, offer for sale, expose for sale, sell at retail, or use or explode any fireworks, provided that the Fire Code Official shall have power to adopt reasonable rules and regulations for the granting of permits for supervised public displays of fireworks by a jurisdiction, fair associations, amusement parks, other organizations or for the use of fireworks by artisans in pursuit of their trade. Every such use or display shall be handled by a competent operator approved by the Fire Code Official and shall

be of such character and so located, discharged or fired so as, in the opinion of the Fire Code Official after proper investigation, not to be hazardous to property or to endanger any person.

5608.3 Financial responsibility. Before a permit required by Chapter 1, Section 105.6.14 is issued, the permittee shall file with the Fire Code Official a certificate of insurance issued by an insurance company authorized to transact business in the State of California. Such certificate shall certify that the operations under the permit are covered by the policy. The insurance coverage shall not be less than One Million Dollars for injury or death of one person, One Million Dollars for injury or death to more than one person and One Million Dollars for damage to property in any one occurrence. Should the Fire Code Official decide that the activities of the permittee should be supervised by employees of the Fire Department, then the permittee shall furnish to the Fire Code Official the original or certified copy of the policy of insurance in the amounts above provided. The City of Long Beach, its officers, agents, employees and volunteers shall be named parties insured under said policy insofar as the activities of such officers and employees pertain to operations of permittee under the permit. The policy of insurance shall be approved by Risk Management as to sufficiency and the City Attorney as to form. Upon approval, the policy of insurance will be returned if permittee files a certificate of insurance issued by the insurance carrier. No insurance will be required if the permittee is a public agency.

5608.4 Qualifications. The handling and firing of explosives shall be performed only by authorized pyrotechnicians licensed by the State of California, or by employees who are at least 18 years of age under the direct personal supervision of the authorized blaster.

18.48.710 – CFC Chapter 57, Section 5704.2.11.3—Depth and cover.

Section 5704.2.11.3 of Chapter 57 of the California Fire Code is amended to read:

5704.2.11.3 Depth and cover. Excavation for underground storage tanks shall be made with due care to avoid undermining of foundations of existing structures. Underground tanks shall be set on firm foundations and surrounded with at least 6 inches of noncorrosive inert material such as clean sand or gravel well tamped in place or in accordance with the manufactures installation instructions. Tanks shall be covered with a minimum of 2 feet of earth or shall be covered by not less than 1 foot of earth, on top of which shall be placed a slab of reinforced concrete not less than 4 inches thick.

When underground tanks are, or are likely to be, subject to traffic, they shall be protected against damage from vehicles passing over them by at least 3 feet of earth cover, or 18 inches of well tamped earth plus 6 inches of reinforced concrete, or 8 inches of asphaltic concrete. When asphaltic or reinforced concrete paving is used as part of the protection, it shall extend at least 1 foot horizontally beyond the outline of the tank in all directions.

For tanks built in accordance with Sections 3404.2.7 the burial depth and the height of the vent line shall be such that the static head imposed at the bottom of the tank will not exceed 10 psig if the fill or vent pipe is filled with liquid.

If the depth of cover exceeds 7 feet or the manufacture's specifications, reinforcements shall be provided in accordance with the tank manufacture's recommendations.

Nonmetallic underground tanks shall be installed in accordance with the manufacture's instructions. The minimum depth of cover shall be as specified above.

18.48.720 – CFC Chapter 57, Section 5705.3.5.2—Occupancy quantity limits.

Section 5705.3.5.2 of Chapter 57 of the California Fire Code is amended by the addition of the following paragraph to Subsection 7, Group R Occupancies, to read:

In dwellings and apartment houses containing not more than three dwelling units and accompanying attached or detached garages, storage other than fuel oil is prohibited, except that which is required

for maintenance or equipment operation which shall not exceed five gallons in non sprinklered building or ten gallons in sprinklered occupancies. Containers shall be listed or approved for the specific product to be stored, and shall have an exterior label identifying the product in the container.

18.48.730 – CFC Chapter 61, Section 6101—General.

Section 6101 of Chapter 61 of the California Fire Code is amended by the addition of Section 6101.4 to read:

6104.4 Inside storage or use. No liquefied petroleum gases of any type or mixture shall be permitted in any occupancy either for sale, use or storage without the approval of the Fire Code Official.

18.48.740 – CFC Chapter 61, Section 6103.2.2—Industrial vehicles and floor maintenance machines.

Section .2.2 of Chapter 61 of the California Fire Code is amended by the addition of Section 6103.2.2.1 to read:

6103.2.2.1 Portable cylinders. The use of portable cylinders of liquefied petroleum gas as motorized equipment fuel in occupancies is limited as follows: Liquefied petroleum gas fuel tanks on motorized equipment are limited to two per vehicle with a combined capacity not to exceed fifty pounds. Refilling or exchanging of tanks shall not be permitted within the occupancy and shall be permitted only in approved locations as determined by the Fire Code Official.

18.48.750 – CFC Chapter 61, Section 6104.3—Container location.

Section 3804.3 of Chapter 38 of the California Fire Code is amended by the addition of Section 6104.3.3 to read:

6104.3.3 Tank orientation. Unless special protection is provided and approved by the Fire Code Official, containers of liquid petroleum gas shall be oriented so that their longitudinal axes do not point toward other liquid petroleum containers, vital process equipment, control rooms, loading stations, flammable liquid storage tanks or required fire access roads.

18.48.760 – CFC Chapter 61, Section 6101.3—Construction documents.

Section 6101.3 of Chapter 61 of the California Fire Code is amended to read:

6101.3 Construction documents. The installer shall submit construction documents for any single or multi LP-gas container or system installation.

18.48.770 – CFC Appendix Chapter B, Section B105.2—Buildings other than one- and two-family dwellings.

Exception #1 for Section B105.2 of Appendix Chapter B of the California Fire Code is amended to read:

Exception #1: A reduction in required fire-flow of up to 50 percent, as approved, is allowed when the building is provided with an approved automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2. The resulting fire flow shall not be less than 1,500 gallons per minute for the prescribed duration as specified in Table B105.1.

CHAPTER 18.60 MOVING BUILDINGS

CHAPTER 18.60
MOVING BUILDINGS

18.60.010 – Definitions.

The following terms, as used in this chapter, shall have the signification attached to them in this section unless otherwise clearly apparent from the context:

A. "Building or structure" means and includes a structure or edifice which is more than ten (10) feet in width or more than twelve (12) feet in length, or which contains more than one hundred twenty (120) square feet of floor area.

B. "Building and structure mover" is a person who undertakes or offers to undertake, or purports to have the capacity, to move a building or structure, or to do building or structure moving work.

C. "Building or structure moving work" means and includes the moving of a "building or structure", as defined in Subsection 18.60.010.A, in any horizontal direction, and includes the shoring, raising, or lowering of a building or structure preparatory to the actual moving of the building or structure.

18.60.020 – Permit—Required.

No person shall move a building or structure over, upon or along any street, or from a location on one lot to a location on another lot, or perform any part of such moving work unless the building or structure has first been examined and posted in the manner required in this chapter, and a permit in writing to do so for each and every separate moving operation has been applied for and obtained from the Building Official. However, any person fully complying with the provisions of this chapter may obtain a permit to move a building or structure to a location outside the City, or to a building or structure mover's yard for storage, or for the severance of a building or structure from real property pursuant to local, State or federal government requirements. In each such instance, no examination, posting or completion bond shall be required, such requirements being waived. However, all such requirements shall be fully complied with prior to the removal of each such building or structure from such storage yard or severance location to a location within the City limits. Nothing in this chapter shall be deemed applicable to the moving of a building or structure from one location on a lot to another location on the same lot. See Chapters 18.04 and 18.07.

18.60.030 – Permit—Qualification for issuance.

No moving permit shall be issued to any person unless the applicant therefore holds a valid unrevoked state house and building moving, wrecking contractor's license, and has filed with the City a bond or a liability or indemnity policy of insurance as required by the City for a building or structure mover's license. The provisions of this section shall not, however, be deemed to prohibit any general contractor or owner of any building or structure from obtaining a permit to move such building or structure from one location on a lot or parcel to a different location on the same lot or parcel.

18.60.040 – Permit—Terms and conditions of issuance.

No permit shall be issued to relocate any building or structure which is so constructed or in such condition as to be dangerous; or which is infested with pests or unsanitary; or which is unfit for human habitation, if it is to be so utilized; or which is so dilapidated, defective, unsightly or in such a condition of deterioration or disrepair that its relocation at the proposed site would cause appreciable harm to or be materially detrimental to the property or improvements in the district within a radius of five hundred (500) feet from the proposed site; or if it is determined that it is detrimental to the future development of the area; or if the proposed use is prohibited by Title 21 Zoning Regulations of this City; or if the building or structure is of a type prohibited at the proposed location by any other law or ordinance; provided, however, that if the condition of the building or structure, in the judgment of the Building Official, admits of practicable and effective repair, the permit may be issued upon condition as provided in this chapter.

18.60.050 – Permits—Application—Examination of structure.

A. Before a moving permit is issued, the person or persons proposing to do such work shall pay to the City the fees as required in Section 18.60.200 and shall complete an application form furnished by the Building Official and shall set forth such information thereon as the Building Official may reasonably require in order to carry out the purposes of this chapter. Said official shall then cause to be made an examination of the building or structure proposed to be moved, and the location to which it is proposed to move the same, if such location is within the City and if such examination is required by this chapter. The Building Official shall post the building in the manner specified in Section 18.60.070 and the date of this posting shall commence the seven-day period for the filing of a protest by the property owners within a radius of three hundred (300) feet of the relocation site as specified in this chapter.

B. A separate application upon a form furnished by the Building Official must be filed and a separate permit obtained for the moving of each separate building or structure, or portion of a building or structure, except that neither posting, examination fee, nor separate permit will be required when a garage is moved with and under the same permit obtained for the moving of a single-family dwelling, provided the moving of the dwelling and garage is completed in one moving operation and such garage and dwelling are to be located on one parcel.

C. The Building Official shall, in granting any moving permit, impose thereon such terms and conditions as it may deem reasonable and proper in accordance with the provisions of this chapter.

D. The terms and conditions upon which each permit is granted shall be written upon the permit, or appended, in writing, thereto.

E. In addition to the posting of the notice, the Building Official shall mail a copy of the notice to each person indicated upon the records of the County Assessor as being the owner of any property within a radius of three hundred (300) feet of the location to which the building or structure is to be moved.

18.60.060 – Payment of permit fees.

A. Every applicant for a moving permit shall, at the time of application therefore, pay to the City the required permit fees as set forth in Section 18.60.200, and shall complete a permit application upon a form furnished by the Building Official, and shall set forth upon the form the size of building or structure, by street and number, and by legal description of both locations, together with the specific route to be traversed by the building or structure in the process of being moved from one location to another. Upon the same form the applicant shall make an affidavit that, in placing the building or structure in its new location, it shall not be in violation of any of the provisions of this chapter, any zoning regulations in Title 21 of the Long Beach Municipal Code, or other law or ordinance applicable to such building or structure.

B. No moving permit shall authorize the moving of more than one building or structure or more than one section or portion of any building or structure, or when such building or structure to be moved is cut into two or more sections or portions; except that one moving permit only shall be required for the moving of a single-family dwelling and garage; provided, however, that neither the garage nor dwelling is cut into sections for the purpose of moving; and further provided, that the moving of the dwelling and garage is completed in one moving operation.

18.60.070 – Moving notice—Posting—Contents.

A. The moving notices shall be posted by the Building Official and shall be placed conspicuously upon the front and upon the rear of the location to which it is proposed to move a building or structure, and upon the front of the building or structure proposed to be moved. Such notices

shall be not less in size than eight (8) inches by ten (10) inches and shall bear, in letters not less than one and one-half (1.5) inches in height, the words "MOVING NOTICE". In addition, such notice shall contain the following information:

1. Name and owner of the building or structure after its relocation;

2. A brief description of the building or structure;

3. Address of the building or structure at its present location;

4. The street and number to which the building or structure is proposed to be moved;

5. The date upon which the building or structure was posted with the notices;

6. The name of the building and structure mover or person who proposes to do the moving work;

7. The name of the Building Official who inspects the building or structure and relocation site.

B. Upon the notice there shall also appear the following:

"Any property owner within a radius of three hundred (300) feet of the relocation site may file a written protest with the Building Official within seven (7) days of the date of the signing and dating of this notice by the Building Official. In the event of such protest, the Board of Examiners, Appeals and Condemnation will set a date at which time they will hold a hearing and either approve the moving of the building or structure, or sustain the protest."

18.60.080 – Notice of decision to grant or deny permit.

If, after making the examination, the Building Official determines, in accordance with the standards set forth in this chapter, that the application for permit should be denied or should be granted under certain specified conditions, he or she shall notify the applicant of his or her decision by letter, postage prepaid, addressed as shown on the application for permit. If such application is to be granted under certain conditions, such conditions shall specifically be set forth in such notice. The decision of the Building Official shall be final and conclusive, and such notice shall so state, unless within seven (7) days after the mailing of such notice, the applicant has filed with the Building Official a written appeal from that official's decision, specifying the grounds of such appeal. Any such appeal shall be heard by the Board of Examiners, Appeals and Condemnation as provided hereinafter.

18.60.090 – Written protests against moving—Hearing.

Any property owner within a radius of three hundred (300) feet of the relocation site may file a written protest with the Building Official within seven (7) days of the date of the posting of the moving notice. In the event of such protest, the Board of Examiners, Appeals and Condemnation will set a date at which time they will hold a hearing and either approve the moving of the building or structure, or sustain the protest.

18.60.100 – Public hearing on protests—Notice.

If any written protests against the proposed building or structure moving work are filed with the Building Official, and such protests are postmarked on or before the expiration of the seven (7) day posting period, or if the applicant has theretofore filed an appeal from the decision of the Building Official as hereinabove provided, the Building Official shall, within three (3) days following the expiration of the above seven (7) day posting period, present the protest or appeal by the applicant to the Board of Examiners, Appeals and Condemnation at its next regular meeting. The Board of Examiners, Appeals and Condemnation shall set a time for public hearing on such protest, or on such appeal, which time of hearing shall be not less than ten (10) nor more than thirty (30) days from the

time the Board of Examiners, Appeals and Condemnation received the protest or appeal. When the time for public hearing has been so set, the Building Official shall mail a notice thereof, postage prepaid, to each person having filed a written protest, at the address, if any, specified thereon. The Building Official shall, in all cases, also send a notice of such hearing by registered mail, postage prepaid, to the applicant, whether or not he has appealed from the decision of the Building Official. Such notice shall also be sent to the applicant's representative if one has been specified. Such notices of public hearing shall be mailed at least five (5) days prior to the date of such hearing.

18.60.110 – Hearing and determination by Board of Examiners, Appeals and Condemnation.

At the time set for public hearing, the Board of Examiners, Appeals and Condemnation shall hear and pass upon the protests filed and the applicant's appeal, if any, from the decision of the Building Official. Based upon the evidence adduced at such hearing, or as obtained from an examination made by the Board of Examiners, Appeals and Condemnation of the building or structure, proposed route to be traversed and proposed new location, the Board of Examiners, Appeals and Condemnation may direct the Building Official to deny the application or may direct that such permit be granted by the Building Official on the same terms and conditions previously specified by that official or in accordance with such terms and conditions as the Board of Examiners, Appeals and Condemnation may deem proper in the premises; provided, however, that the Board of Examiners, Appeals and Condemnation shall, in arriving at its determination, be governed by the same standards, limitations and norms as are set forth in Section 18.60.040. The Board of Examiners, Appeals and Condemnation shall not, in any event, order the Building Official to grant such permit under any conditions if the same will result in the moving or relocation of any structure which would be a violation of any City, County or State law, or would clearly inconvenience any considerable number of persons, or would violate or disturb the public welfare, safety or peace.

18.60.120 – Issuance of permit.

After the moving notices have been in place seven (7) days, and if the Building Official has written a letter of intent to grant, and if no written protest has been filed with the Building Official against the proposed moving, and if the applicant has not appealed from the decision of the Building Official, a moving permit shall be granted in accordance with the conditions specified by the Building Official, upon the filing of the required bond.

18.60.130 – Bond—Posting required.

Notwithstanding anything to the contrary herein, no moving permit shall be issued unless the applicant first posts with the Building Official a bond or insurance as prescribed in regulations issued by the City Manager pursuant to Section 2.84.040.

18.60.140 – Bond—Conditions.

Every bond posted pursuant to this section shall be conditioned as follows:

A. Each and all of the terms and conditions of the moving permit shall be complied with to the satisfaction of the Building Official;

B. All of the work required to be done pursuant to the terms and conditions of the moving permit shall be fully performed and completed within the time limit specified in Section 18.60.190. The time limit may be extended for good and sufficient cause by the Building Official pursuant to Section 18.03.050. No such extension of time shall be valid unless written, and no such extension shall release any surety upon any bond.

18.60.150 – Bond—Notice of default to principal and surety.

A. Whenever the Building Official finds that a default has occurred in the performance of any term or condition of any permit, written notice thereof shall be given to the principal and to the surety on

the bond. Such notice shall state the work to be done, the estimated cost thereof, and the period of time deemed by the Building Official to be reasonably necessary for the completion of such work. After receipt of such notice, the surety must, within the time therein specified, either cause the required work to be performed or, failing therein, must pay over to the Building Official the estimated cost of doing the work, as set forth in the notice, plus an additional sum equal to twenty-five percent (25%) of the estimated cost. Upon the receipt of such money, the City shall proceed, by such mode as it deems convenient, to cause the required work to be performed and completed, but no liability shall be incurred therein other than for the expenditure of the sum of money in hand therefore.

B. If a cash bond has been posted, notice of default, as provided above, shall be given to the principal, and if compliance is not had within the time specified, the City shall proceed without delay and without further notice of proceedings whatever to use the cash deposit, or any portion of such deposit, to cause the required work to be done, by contract or otherwise, in the discretion of the City. The balance, if any, of such cash deposit shall, upon the completion of the work, be returned to the depositor, or to his or her successors or assigns, after deducting the cost of the work, plus twenty-five percent (25%) thereof.

18.60.160 – Bond—Default—Option of surety.

When any default has occurred on the part of the principal under the provisions of Section 18.60.150, the surety shall have the option, in lieu of completing the work required, to demolish the building or structure, and to clear, clean and restore the site. If the surety defaults, the City shall have the same option.

18.60.170 – Bond—Term.

The term of each bond furnished pursuant to Sections 18.60.130 through 18.60.180 shall commence upon the date of the posting thereof and shall terminate upon the completion, to the satisfaction of the Building Official, of the performance of all of the terms and conditions of the moving permit. Such completion shall be evidenced by a statement thereof, signed by the Building Official, a copy of which will be sent to any surety or principal upon request. When a cash bond has been posted, the cash shall be returned to the depositor, or to his or her successors or assigns, upon the termination of the bond, except any portion thereof that may have been used or deducted as provided elsewhere in Sections 18.60.130 through 18.60.180.

18.60.180 – Bond—Rights of access to premises.

The Building Official, the surety, and the duly authorized representative of either, shall have access to the premises described in the moving permit for the purpose of inspecting the progress of the work. In the event of any default in the performance of any term or condition of the moving permit with reference to the relocation of a structure, the surety, or any person employed or engaged on its behalf, or the Building Official, or any person employed or engaged on his or her behalf, shall have the right to go upon the premises to complete the required work or to remove or demolish the building or structure. It is unlawful for the owner, or his or her representatives, successors or assigns, or any other person, to interfere with or obstruct the ingress to or egress from any such premises of any authorized representative or agent of any surety or of the City engaged in the work of completing, demolishing or removing any building or structure for which a moving permit has been issued, after a default has occurred in the performance of the terms or conditions thereof.

18.60.190 – Expiration of permit—Extension.

Every application for a moving permit issued by the Building Official under the provisions of this chapter shall expire and become null and void at the expiration of a period of ninety (90) days from the date of such application, and every moving permit issued by the Building Official under the provisions of this chapter shall expire and become null and void if the moving work authorized by such permit is not commenced and completed within sixty (60) days from the date of issuance;

provided, however, that the Building Official may extend these periods when the moving of any building or structure is impossible or delayed by reason of inclemency of weather, strikes or other causes not within the control of the mover. If for any reason a moving permit or application therefore is rendered null and void under the provisions of this chapter, and the moving work is desired to be done thereafter, a new application shall be made and a permit obtained from the Building Official, and new fees shall be paid.

18.60.200 – Fee schedule.

In addition to any other fee or fees required, a moving permit fee and, when required, an examination and posting fee, shall be paid to the Building Official as set forth in the schedule of fees and charges established by City Council resolution. Examinations and posting fees shall be paid prior to any examination or investigation by the Building Official.

18.60.210 – Route—Approval of Police, Park, and Public Works Departments.

A. Wherever any building or structure is to be moved over or upon a public street or highway within the City, the application therefore shall be submitted to the Police Chief, who shall endorse the approval of the Police Department thereon as to the routes to be traveled and the hours during which moving operations are to be conducted under the proposed permit. If the routes or hours do not meet with the approval of the Police Department, it shall be the duty of the applicant to alter his or her application to include such routes and hours as will meet the approval of the Police Department.

B. Such application shall also be submitted to the Department of Parks, Recreation and Marine and the designated route to be traveled subject to its approval. Applications may also be submitted to the Department of Public Works when in the discretion of the Building Official wheel loads for any given route may be deemed excessive. In those instances, the Department of Public Works may require the applicant to submit wheel size, load, spacing and any other pertinent information. The Department of Public Works may require modification of the loading or shoring of specific structures or such other precautions as it deems necessary to adequately protect the street and those buildings or structures over which the building or structure will pass.

18.60.220 – Applicability of chapter.

The provisions of this chapter shall not apply to the relocation of buildings or structures to be used by a governmental agency for a governmental purpose.

CHAPTER 18.61 NPDES AND SUSMP REGULATIONS

CHAPTER 18.61
NPDES AND SUSMP REGULATIONS

18.61.010 – Purpose.

The purpose of this chapter is to provide regulations and give legal effect to certain requirements of the National Pollutant Discharge Elimination System (NPDES) permit issued to the City of Long Beach, and the subsequent requirements of the Standard Urban Storm Water Mitigation Plan (SUSMP), mandated by the California Regional Water Quality Control Board, Los Angeles region (RWQCB). The intent of these regulations is to effectively prohibit non-storm water discharges into the storm drain systems or receiving waters and to require source control BMP to prevent or reduce the discharge of pollutants into the storm water to the maximum extent practicable.

18.61.020 – Definition.

Unless otherwise expressly stated, the following words and terms shall, for the purpose of this chapter, have the meanings as defined in the NPDES and SUSMP Regulations Manual. Where the terms are not defined in the NPDES and SUSMP Regulations Manual, such terms shall have ordinarily accepted meaning such as the context implies. Webster's Third New International Dictionary of the English Language, Unabridged shall be considered as providing ordinarily accepted meanings.

18.61.030 – Exception.

Non-storm water discharges into the storm drain systems or to receiving waters are prohibited except where such discharges are expressly permitted in the NPDES and SUSMP Regulations Manual.

18.61.040 – Applicability.

New development projects and redevelopment projects in the City subject to the design and implementation of post-construction controls to mitigate storm water pollution, prior to completion of the projects, shall apply if required in the NPDES and SUSMP Regulations Manual.

18.61.050 – NPDES and SUSMP Regulations Manual.

A. The Building Official shall prepare, maintain, and update, as deemed necessary and appropriate, the NPDES and SUSMP Regulations Manual and shall include technical information and implementation parameters, alternative compliance for technical infeasibility, as well as other rules, requirements and procedures as the City deems necessary, for implementing the provisions of this chapter.

B. The Building Official shall develop, as deemed necessary and appropriate, in cooperation with other City departments and stakeholders, informational bulletins, training manuals and educational materials to assist in the implementation of this chapter.

CHAPTER 18.62 REPORT ON AVAILABLE OFF-STREET PARKING SPACES UPON RESALE

CHAPTER 18.62
REPORT ON AVAILABLE OFF-STREET PARKING SPACES UPON RESALE

18.62.010 – Intent and purpose.

It is the intent of the City Council to assure that all parties to a transaction involving a sale of a residential building within the City of Long Beach within areas designated by City Council as parking-impacted areas are furnished a report on the availability of legally required off-street parking spaces. It is the purpose of this chapter that the requirement of such a report will reduce violations on existing parcels of residential property and will prevent violations in the future.

18.62.020 – Definitions.

A. "Owner" shall mean any person, co-partnership, association, corporation or fiduciary having legal or equitable title or any interest in any real property.

B. "Residential building" shall mean any improved real property designed or permitted to be used for dwelling purposes, situated in the City, and shall include the building or structures located on said improved real property.

C. "Agreement of sale" shall mean any agreement or written instrument which provides that title to any property shall thereafter be transferred from one owner to another owner.

D. "Common parking" shall mean any parking facility serving more than one (1) dwelling unit with a common entrance and a common exit.

18.62.030 – Report or exemption certificate required.

Upon entering into an agreement of sale or exchange of any residential building in a parking-impacted area, as such an area or areas may be designated from time to time for the purposes of this Chapter 18.62 by resolution of the City Council, unless excluded by Section 18.62.090, the owner or his authorized representative shall obtain from the City a report setting forth the legally required off-street parking for such property and a statement as to its availability or lack of availability, or an exemption certificate. The report shall specifically identify any off-street parking spaces which should be used for vehicle parking but are not available for such use because of illegal conversion to another use, or any physical condition which prohibits the use of such spaces for normal parking of an automobile. Said report or exemption certification shall be valid for a period not to exceed six (6) months from date of issue.

18.62.040 – Application.

Upon application of the owner or his authorized agent and accompanied by a fee, or a fully executed letter/agreement authorizing payment out of escrow, in or of an amount as set forth in the schedule of fees and charges established by City Council resolution, the Director shall review pertinent City records, cause an on-site inspection of the property as provided by Section 18.62.050, and deliver to the applicant a report on the availability of legally required off-street parking.

18.62.050 – Inspection.

In addition to the information supplied in Section 18.62.040, the Director shall cause a physical inspection of the subject property or, should entry be refused, the Director shall indicate on said report that entry was refused.

18.62.060 – Citation.

The Director shall cite any unlawful condition relating to the use and maintenance of off-street parking spaces. Such condition shall be brought into compliance within ninety (90) days of said citation, or

within sixty (60) days of close of escrow, whichever comes first. If such compliance is not obtained, formal enforcement proceedings shall be prosecuted as provided by law.

18.62.070 – Delivery of report.

The report on the availability of legally required off-street parking prepared pursuant to Section 18.62.030 shall be delivered by the owner or the authorized designated representative of the owner to the buyer or transferee of the residential building proper to the consummation of the sale or exchange. The buyer or transferee shall execute a receipt therefore as furnished by the City and said receipt shall be delivered to the Department as evidence of compliance with the provisions of Section 18.62.030.

18.62.080 – Exemption certificate.

The following exceptions shall require an exemption certificate in lieu of the parking availability report:

A. Condominiums, townhomes, apartment buildings and similar buildings whose parking is supplied completely by way of a common parking facility:

B. The first sale of a residential building which has never been occupied;

C. A residential building whereby a review of the records indicates that no parking was ever provided at the site.

18.62.090 – Exclusions.

The provisions of this chapter shall not apply to:

A. Transfers which are required to be preceded by the furnishing to a prospective transferee of a copy of a public report pursuant to Section 11018.1 of the California Business and Professions Code;

B. Transfers pursuant to court order, including, but not limited to, transfers ordered by a probate court in administration of an estate, transfers pursuant to a writ of execution, transfers by a trustee in bankruptcy, transfers by eminent domain, or transfers resulting from a decree for specific performance;

C. Transfers to a mortgagee by a mortgagor in default, transfers to a beneficiary of a deed of trust by a trustor in default, transfers by any foreclosure sale after default, transfers by any foreclosure sale under default in an obligation secured by a mortgage, or transfers by sale under a power of sale after a default in an obligation secured by a deed of trust or secured by any other instrument containing a power of sale;

D. Transfer by a fiduciary in the course of the administration of a guardianship, conservatorship, or trust;

E. Transfers from one co-owner to one or more co-owners;

F. Transfers made to a spouse, or to a person or persons in the lineal, line or consanguinity of one or more of the transferors;

G. Transfers between spouses resulting from a decree of dissolution of a marriage or a decree of legal separation or from a property settlement agreement incidental to such decrees;

H. Transfers by the State Controller in the course of administering the Unclaimed Property Law (Chapter 7 [commencing with Section 1500] of Title 10 of Part 3 of the California Code of Civil Procedure);

I. Transfers to a governmental entity under eminent domain or threat of eminent domain.

18.62.100 – Penalties.

A. Anyone in violation of the provisions of this chapter shall be guilty of a misdemeanor and upon conviction thereof shall be punishable as provided by the provisions of Section 1.32.010 of the Long Beach Municipal Code.

B. No sale or exchange of residential property shall be invalidated solely because of the failure of any person to comply with any provisions of this chapter unless such failure is an act or omission which would be a valid ground for rescission of such sale or exchange in the absence of this chapter.

CHAPTER 18.63 ALTERNATIVE BUILDING STANDARDS FOR ADAPTIVE REUSE PROJECTS

CHAPTER 18.63
ALTERNATIVE BUILDING STANDARDS FOR ADAPTIVE REUSE PROJECTS

18.63.010 – Purpose.

The Adaptive Reuse Ordinance in Title 21 Zoning Regulations expanded the scope of eligible and underutilized buildings or structures that have great potential to be converted into new uses or occupancy that can benefit from relief of parking standards, setbacks and zoning height limitations. However, key to the success of the Adaptive Reuse Ordinance relies on the ability of the Building Official and Fire Code Official to effectively use their authority to grant code modification or alternative materials, design and methods of construction and equipment to address practical difficulties involved in complying with the strict provisions of the code or consider alternative design or methods not specifically prescribed in the code. Other statutory regulations such as the most recently adopted edition of the California Historic Building Code and Chapter 34 of the California Building Code, including Sections 17958.11 and 19957 of the California Health and Safety Code, provides the Building Official and Fire Code Official with the ability to consider other alternative building standards. Therefore, the purpose of this chapter is to amend, expand, establish and clarify alternative building standards for the conversion of existing buildings or structures to accommodate new uses or occupancy for other purposes than what it was originally designed for and still provide reasonable use and safety to the building occupants.

18.63.020 – Applicability.

Projects that meet the definition and applicable requirements of an adaptive reuse project pursuant to Title 21 Zoning Regulations may be permitted to use the alternative building standards of this chapter. The requirement of Section 18.63.030 may apply to the following projects:

1. Conversion of existing non-residential buildings, or portion thereof, to joint live/work units for artists and artisans, provided no more than thirty-three percent (33%) of any unit shall be used for residential purposes.

2. Conversion of existing non-residential buildings, or portion thereof, to other residential uses or occupancy.

3. Conversion of existing non-residential buildings, or portion thereof, to other non-residential uses or occupancy.

4. Conversion of existing residential buildings, or portion thereof, to non-residential uses or occupancy.

18.63.030 – Alternative Building Standards Manual.

A. Although other chapters or sections of the Long Beach Municipal Code and the most recently adopted edition of the California Building Standards Code are applicable to new construction or a change of use or occupancy, the use of the Alternative Building Standards Manual may be permitted to provide alternative regulations for adaptive reuse projects that meet the applicability requirement of Section 18.63.020.

B. The Building Official and Fire Code Official shall prepare, maintain, and update, as deemed necessary and appropriate, the Alternative Building Standards Manual and shall include technical information and implementation parameters, alternative compliance for technical infeasibility, as well as other rules, requirements and procedures as the City deems necessary, for implementing the provisions of this chapter.

C. The Building Official and Fire Code Official shall develop, as deemed necessary and appropriate, in cooperation with other City departments and stakeholders, informational bulletins, training manuals and educational materials to assist in the implementation of this chapter.

CHAPTER 18.64 SANDBLASTING

CHAPTER 18.64
SANDBLASTING

18.64.010 – Permit—Required.

A. No person, firm or corporation shall engage in sandblasting the outside of any building or structure in the City without first obtaining a permit to do so from the Building Official.

B. The permit is required for the purpose of placing the City on notice regarding intended sandblasting operations, thus making possible the inspection of sandblasting operations in the City so that sandblasting regulations enacted for the protection of the health and property of members of the public may effectively be enforced.

18.64.020 – Permit—State license required.

No sandblasting permit shall be issued to any person not licensed or otherwise prohibited by State law from engaging in sandblasting operations.

18.64.030 – Permit—Separate premises.

A separate permit shall be required for each separate premises, court or group of structures to be sandblasted. More than one actual building or structure may be included on a single permit if all the buildings or structures are on one lot or one contiguous parcel of land.

18.64.040 – Permit—Application.

Each application for permit shall contain the following information:

A. The name and address of the person or company applying for the permit;

B. The location of the job;

C. The building or structure or portion thereof to be sandblasted;

D. Such other information as the Building Official shall reasonably require to aid in the proper inspection and enforcement of City sandblasting regulations.

18.64.050 – Permit—Inspection fee.

No sandblasting permit shall be issued prior to the payment of an inspection fee consistent with the fee schedule set forth in Chapter 18.06. No plan examination fee or other type of additional fee described in Chapter 18.06 shall be required.

18.64.060 – Notice of sandblasting.

Any person, firm or corporation conducting sandblasting in the City shall, not less than forty eight (48) hours prior to sandblasting, deliver to each residence or business establishment within one hundred (100) feet of all buildings or structures to be sandblasted a written notice stating in substance as follows:

NOTICE OF SANDBLASTING

On, _____
(Date or Dates)

20_____, sandblasting will be carried out on the exterior of the building at

(Address of building to be sandblasted)

(Name of company)

whose address is

The sandblasting will be conducted in accordance with Municipal Code Section 18.64.010 et seq., of the City of Long Beach.

_____ _____
(Name of owner or foreman)

_____ _____
(Address of owner or foreman)

18.64.070 – Dry sandblasting.

No person, firm or corporation shall engage in "dry" sandblasting in the City in the absence of written special permission from the Building Official, such special permission to be granted only if the particular circumstances of the job make wet sandblasting impractical.

18.64.080 – Permitted hours.

No person, firm or corporation shall engage in sandblasting before eight o'clock (8:00) A.M. or after five o'clock (5:00) P.M. of any day, or on Saturdays, Sundays or legal holidays upon any structure which is within one hundred (100) feet of any inhabited single or multifamily residential dwelling.

18.64.090 – Property protection.

No person, firm or corporation shall engage in sandblasting without first protecting adjacent property, public street and pedestrian walkway areas by erecting canvas or other suitable barriers sufficient to protect them from the splashing or blowing of sand or water.

CHAPTER 18.65 DEMOLITION OF HISTORIC LANDMARKS

CHAPTER 18.65
DEMOLITION OF HISTORIC LANDMARKS

18.65.010 – Demolition of landmarks prohibited without building permit and funding for replacement structure.

A. No permit to demolish a landmark designated pursuant to Chapter 2.63 of this code may be issued by the Department unless (1) a building permit has been issued for a replacement structure or project for the property involved and (2) the applicant has submitted evidence to the satisfaction of the Planning Commission that a financial commitment has been obtained by the applicant to assure the completion of the structure or project.

B. Whenever, following action by the Planning Commission pursuant to Subsection 18.65.010.A, a permit to demolish a landmark is either issued or denied by the Department, the Director shall immediately notify the applicant and the Cultural Heritage Commission of such issuance.

18.65.020 – Appeal to City Council.

A. The applicant or any interested person may appeal a decision to issue or withhold a demolition permit by the Director under Section 18.65.010 to the City Council by filing an appeal therefrom with the City Clerk within ten (10) days of notification of the applicant and the Cultural Heritage Commission under Section 18.65.010 of the decision, and no decision shall be final until expiration of that ten-day period. Such appeal shall be set for hearing by the City Council within twenty-one (21) days of filing the appeal, and the applicant shall not be relieved of the requirements of this section until a final decision is rendered by the City Council.

B. On appeal, the City Council shall determine, through factual evidence, whether unusual and compelling circumstances, including extreme economic hardship to the applicant, exist in the case before it, and if it so finds, it shall act on the appeal in such a way as to result in granting of the permit which is the subject matter of the appeal.

C. Both the applicant and appellant, if different from the applicant, shall be notified by mail to the address of the applicant or appellant as indicated on the permit application or appeal of all hearings and decisions made pursuant to this section.

18.65.030 – Exception.

This chapter shall not apply to any landmark which has been determined by the Fire Code Official and Building Official to be imminently dangerous or to constitute an immediate threat to the public health and safety.

18.65.040 – Construction.

Nothing in this chapter shall be construed to be contrary to or inconsistent with the provisions of Chapter 12.75 (commencing with Section 7060) of Division 7 of Title 1 of the California Government Code, and should any provision of this chapter be contrary to or inconsistent with the provisions of that Chapter 12.75, then the provisions of Chapter 12.75 shall prevail.

CHAPTER 18.66 VISITABILITY OF DWELLING UNITS

CHAPTER 18.66
VISITABILITY OF DWELLING UNITS

18.66.010 – Purpose and intent.

The purpose of this chapter is to provide regulations which will make certain dwelling units visitable by disabled persons. This chapter shall be applicable to new construction of single-family or duplex dwelling units which receive assistance from the City as defined below. Additions or alterations to existing affected dwelling units are exempt.

18.66.020 – Definitions.

For the purpose of this chapter, the following definitions shall apply:

"Affected dwelling unit" means new construction which is a single-family or duplex residential unit, the developer, builder or owner of which receives City assistance for construction. In the case of a duplex, each unit shall be considered an affected dwelling unit subject to this chapter.

"City assistance" means funding in the form of loans or grants from the City, or any agency or program in which the City participates, including, but not limited to:

A. A building contract or similar contractual agreement involving a City funded program or fund, or a program or fund in which the City participates in decision making on funding;

B. A real estate purchase, lease, or donation by the City or its agents;

C. Preferential tax treatment, bond assistance, mortgage assistance, or similar financial advantages from the City or its agents;

D. Disbursement of Federal or State construction funds including Community Development Block Grant Funds; or

E. A City contract to provide funding or a financial benefit for housing.

18.66.030 – Applicability of visitability requirements.

Each affected dwelling unit shall meet the requirements of Section 18.66.040.

18.66.040 – Design and construction requirements.

A. Accessible entrances. An affected dwelling unit must provide at least one (1) accessible entrance that complies with the following:

1. The accessible entrance door must have a minimum net clear opening of thirty-two (32) inches, measured between the face of the door and the stop, when the door is in the ninety degree (90°) open position.

2. A floor or landing shall be provided on each side of the accessible door, measuring forty-four (44) inches at right angles to the plane of the door in its closed position. The floor or landing on the interior side shall be level. The exterior side may be sloped up to one-fourth (1/4) inch per foot.

3. The width of the level area on the side to which the door swings shall extend twenty four (24) inches past the strike edge of the door if the door swings to the outside and eighteen (18) inches past the strike edge if the door swings into the unit.

4. The floor or landing on the exterior side shall not be more than one-half (1/2) inch below the floor level on the inside of the door.

5. The floor or landing shall not be more than one-half (1/2) inch lower than the threshold of the doorway, except at sliding doors where it may be three-fourths (3/4) inch.

6. On the interior side of the door only, hardware shall be located between thirty (30) inches and forty four (44) inches above the floor. Hand activated hardware shall be operable with a single effort by lever type hardware, panic bars, push-pull activating bars, or other hardware designed to provide passage without requiring the ability to grasp the opening hardware.

7. The accessible entrance may be at the front, side or back of the affected dwelling unit.

8. An accessible route that can be negotiated by a person using a wheelchair shall be provided that connects the accessible entrance to the sidewalk, garage or driveway such that the affected dwelling unit can be entered from the public right-of-way.

B. Accessible routes within the dwelling unit. An affected dwelling unit must provide an accessible route through the hallways and passageways of the first floor of the dwelling unit. The route must provide a minimum width of thirty-six (36) inches and be level with ramped or beveled changes at door thresholds, except that sunken or raised areas shall be permitted when an accessible route that connects a portion of the living or family room, bathroom, and the accessible entrance door is provided.

C. Bathroom. At least one (1) bathroom, consisting of at least a toilet and a lavatory, must be provided on the first floor of an affected dwelling unit, using the following standards:

1. Door. Door or opening into the bathroom shall provide a minimum of thirty-two (32) inches nominal clear space, measured between the face of the door and the stop, when the door is in the ninety degree (90°) open position. A thirty-four (34) inch door is acceptable. Door hardware shall meet the requirements of Subsection 18.66.040.A.6 on both sides of the door.

2. A clear space measuring thirty (30) inches by forty-eight (48) inches inside the bathroom shall be provided. This space may include maneuverable space under fixtures, if provided.

3. Light switches. A light switch located no higher than forty-two (42) inches above the floor shall be provided inside the bathroom.

4. Grab bar backing.

   a. Where the toilet is placed adjacent to a side wall, reinforcement shall be installed on both sides or one side and the back. If reinforcement is installed at the back it shall be installed between thirty-two (32) inches and thirty-eight (38) inches above the floor. The grab bar reinforcement shall be a minimum of six (6) inches nominal in height. The backing shall be a minimum of forty (40) inches in length. Reinforcement installed at the side of the toilet shall be installed thirty-two (32) inches to thirty-eight (38) inches above the floor. The reinforcement shall be installed a maximum of twelve (12) inches from the rear wall and shall extend a minimum of twenty-six (26) inches in front of the water closet stool. The grab bar reinforcement shall be a minimum of six (6) inches nominal in height.

   b. Where the toilet is not placed adjacent to a side wall, the bathroom shall have provisions for installation of floor mounted, foldaway or similar alternative grab bars.

      The reinforced wall or floor shall be capable of supporting a load of at least two hundred fifty (250) pounds.

18.66.050 – Exemption.

A. When the Building Official determines that compliance with any portion of any regulation under this chapter would create an undue hardship and that equivalent facilitation is available, an exception to that portion of the regulation shall be granted when equivalent facilitation is provided.

B. When the Building Official determines that compliance with any portion of any regulation under this chapter would create an undue hardship due to topographical conditions of the site and that no equivalent facilitation is available, an exemption to that portion of the regulation shall be granted.

CHAPTER 18.67 CONSTRUCTION AND DEMOLITION RECYCLING PROGRAM

CHAPTER 18.67
CONSTRUCTION AND DEMOLITION RECYCLING PROGRAM

18.67.005 – Purpose.

The State of California through its California Integrated Waste Management Act of 1989, Assembly Bill 939 ("AB 939") requires that each local jurisdiction in the state divert fifty percent (50%) of discarded materials (base year 1990) from landfills by December 31, 2000. Every city and county, including the City, could face fines up to ten thousand dollars ($10,000) a day for not meeting the mandated goal. Approximately twenty-two percent (22%) of the City's solid waste sent to landfills is from construction and demolition activities and the diversion of these materials would have a significant potential for waste reduction and recycling. Reusing and recycling construction demolition materials ("C&D Debris") is essential to further the City's efforts to reduce waste and continue to comply with AB 939. C&D Debris was reduction and recycling have been proven to reduce the amount of such material which is landfilled, increase worker safety, and be cost effective. To ensure compliance with this chapter and to ensure those contractors with this chapter are not placed at a completitive disadvantage, it is necessary to impose a performance security requirement. (Ordinance ORD-07-0025)

18.67.010 – Definitions.

For the purposes of this chapter, the following definitions shall apply:

A. "Applicant" means any individual, firm, limited liability company, association, partnership, political subdivision, government agency, municipality, industry, public or private corporation, or any other entity whatsoever who applies to the City for the applicable permits to undertake any construction, demolition, or renovation project within the City.

B. "Class III landfill" means a landfill that accepts nonhazardous resources such as household, commercial, and industrial waste, resulting from construction, remodeling, repair, and demolition operations. A Class III landfill must have a solid waste facilities permit from the California Integrated Waste Management Board (CIWMB) and is regulated by an enforcement agency (as defined in Public Resources Code Section 40130).

C. "Construction" means the building of any facility or structure or any portion thereof including any tenant improvements to an existing facility or structure.

D. "Construction and demolition debris" (C and D debris) means building materials and solid waste resulting from construction, remodeling, repair, cleanup, or demolition operations that are not hazardous as defined in California Code of Regulations, Title 22, Sections 66261.3, et seq. This term includes, but is not limited to, asphalt, concrete, portland cement concrete, brick, lumber, gypsum wallboard, cardboard, and other associated packaging, roofing material, ceramic tile, carpeting, plastic pipe and steel. The material may be commingled with rock, soil, tree stumps, and other vegetative matter resulting from land clearing and landscaping for construction or land development projects.

E. "C and D recycling center" means a facility that receives only C and D material that has been separated for reuse prior to receipt, in which the residual (disposed) amount of waste in the material is less than ten percent (10%) of the average weight of material separated for reuse received by the facility over a one-month period.

F. "City-sponsored project" means a project constructed by the City or a project receiving fifty percent (50%) or more of its financing from the City.

G. "Covered project" shall have the meaning set forth in Section 18.67.020.

H. "Deconstruction" means the careful dismantling of buildings and structures in order to salvage as much material as possible.

I. "Demolition" means the decimating, razing, ruining, tearing down or wrecking of any facility, structure, pavement or building, whether in whole or in part, whether interior or exterior.

J. "Disposal" means the final deposition of construction and demolition or inert material, to a Class III landfill.

K. "Divert" means to use material for any purpose other than disposal in a landfill or transformation facility.

L. "Diversion requirement" means the diversion of a percentage of the total construction and demolition debris generated by a project via reuse or recycling, unless the applicant has been granted an exemption pursuant to Section 18.67.070 in which case the diversion requirement shall be the maximum feasible diversion rate established by the Director in relation to the project.

M. "Enforcement agency (EA)" means an enforcement agency as defined in Public Resources Code Section 40130.

N. "Inert solids/inert waste" means nonliquid solid resources including, but not limited to, soil and concrete, that do not contain hazardous waste or soluble pollutants at concentrations in excess of water quality objectives established by a regional water board pursuant to Division 7 (Sections 13000, et seq.) of the California Water Code and does not contain significant quantities of decomposable solid resources.

O. "Project" means any activity which requires an application for a building or demolition permit or any similar permit from the City pursuant to Section 18.67.020.

P. "Recycling" means the process of collecting, sorting, cleansing, treating, and reconstituting materials for the purpose of using the altered form in the manufacture of a new product. Recycling does not include burning, incinerating, or thermally destroying solid waste.

Q. "Renovation" means any change, addition or modification in an existing structure.

R. "Reuse" means the use, in the same or similar form as it was produced, of a material which might otherwise be discarded.

S. "Solid waste" means all putrescible and nonputrescible solid, semisolid, and liquid wastes, including garbage, trash, refuse, paper, rubbish, ashes, industrial wastes, demolition and construction wastes, abandoned vehicles and parts thereof, discarded home and industrial appliances, dewatered, treated, or chemically fixed sewage sludge which is not hazardous waste, manure, vegetable or animal solid and semisolid wastes, and other discarded solid and semisolid wastes. "Solid waste" does not include any of the following wastes:

1. Hazardous waste, as defined in Public Resources Code Section 40141;

2. Radioactive waste regulated pursuant to the Radiation Control Law [Chapter 8 (commencing with Section 114960) of Part 9 of Division 104 of the Health and Safety Code];

3. Medical waste regulated pursuant to the Medical Waste Management Act [Part 14 (commencing with Section 117600) of Division 104 of the Health and Safety Code].

T. "Waste management plan" (WMP) means a completed waste management plan form, approved by the City for the purpose of compliance with this chapter, submitted by the applicant for any covered or noncovered project.

U. "Waste management plan attachments" means a list of permitted haulers, reuse facilitators, disposal and recycling facilities, conversions for mass to weight, and green building material suggestions.

18.67.020 – Threshold for covered projects.

A. Private projects.

1. The following threshold will apply to projects for which a demolition or building permit is issued after October 1, 2007, but before January 1, 2008: all construction projects the total valuation of which are, or are projected to be, seventy-five thousand dollars ($75,000.00) or greater and all demolition projects of any valuation, ("covered projects") shall be required to divert at least sixty percent (60%) of all project-related construction and demolition material in compliance with this chapter.

2. The following threshold will apply to projects for which a demolition or building permit is issued on or after January 1, 2008, but before January 1, 2014: all construction projects the total valuation of which are, or are projected to be, fifty thousand dollars ($50,000.00) or greater and all demolition projects of any valuation, ("covered projects") shall be required to divert at least sixty percent (60%) of all project-related construction and demolition material in compliance with this chapter.

3. The following threshold will apply to projects for which a demolition or building permit is issued on or after January 1, 2014: all newly constructed buildings, building additions of one thousand (1,000) square feet or greater, and/or building alterations with a permit valuation of $200,000 or above and all demolition projects of any valuation ("covered projects") shall be required to divert at least sixty percent (60%) of all project-related construction and demolition material in compliance with this chapter.

B. All City-sponsored construction, demolition and renovation projects shall be subject to this chapter, and consequently, shall be considered covered projects.

C. Compliance with this chapter shall be included as a condition of approval on any construction or demolition permit issued for a covered project.

18.67.030 – Submission of a waste management plan.

A. Applicants for construction or demolition permits involving a covered project shall complete and submit a WMP, on a WMP form approved by the City for this purpose, as part of the application packet for the construction or demolition permit. The completed WMP shall indicate all of the following:

1. The estimated volume or weight of the project C and D debris, by material type, to be generated;

2. The maximum volume or weight of such materials that can feasibly be diverted via reuse or recycling. No more than twenty percent (20%) of the sixty percent (60%) diversion rate can be achieved through the recycling or reuse of inert materials unless applicant can demonstrate to the satisfaction of the Director that sufficient structural materials do not exist for recycling or that forty percent (40%) diversion of total waste through non-inert materials is not feasible.

3. The vendor or facility where the applicant proposes to use to collect or receive that material; and

4. The estimated volume or weight of C and D debris that will be landfilled in Class III landfills.

B. Calculating volume and weight of material. In estimating the volume or weight of materials identified in the WMP, the applicant shall use the conversion rates approved by the City for this purpose.

C. Deconstruction. In preparing the WMP, applicants for demolition permits involving the removal of all or part of an existing structure shall consider deconstruction to the maximum extent feasible, and shall make the materials generated thereby available for salvage prior to landfilling. Deconstruction can be used to meet the sixty percent (60%) diversion requirement provided it is accounted for in the WMP.

18.67.040 – Waste diversion deposit.

The project applicant shall submit a waste diversion deposit with the WMP. The amount of the performance security shall be calculated as a percentage of the total project valuation as set forth in the schedule of fees and charges established by City Council resolution, provided, however, that the minimum and maximum fees shall be as set forth in the schedule of fees and charges established by City Council resolution.

18.67.050 – Administrative fee.

The project applicant shall submit an administrative fee with the WMP. The amount of the administrative fee shall be as set forth in the schedule of fees and charges established by City Council resolution.

18.67.060 – Review of WMP.

A. Notwithstanding any other provisions of this title, no building or demolition permit shall be issued for any covered project unless and until the Director has reviewed the WMP. Approval shall not be required, however, where an emergency demolition is required to protect public health or safety. The Director shall only approve a WMP if he or she first determines that all of the following conditions have been met:

1. The WMP provides all of the information set forth in Section 18.67.030.

2. The WMP indicates that at least sixty percent (60%) of all C and D material generated by the project will be diverted or an exemption has been approved pursuant to Section 18.67.080.

3. The applicant has submitted an appropriate waste diversion deposit in compliance with Section 18.67.040.

If the Director determines that these conditions have been met, he or she shall mark the WMP "Approved," return a copy of the WMP to the applicant.

B. If the Director determines that the WMP fails to meet the conditions specified in Subsection 18.67.060.A, he or she shall either:

1. Return the WMP to the applicant marked "Denied," including a statement of reasons.

2. Return the WMP to the applicant marked "Further Explanation Required."

If the applicant determines during the course of the project that the estimated tonnage of material to be generated and or recovered from the project is substantially different from the WMP, applicant shall submit an addendum to the original WMP.

18.67.070 – Compliance with a WMP.

A. Within thirty (30) days after the completion of any covered project, the applicant shall submit to the Director documentation that it has met the diversion requirement for the project. Applicant shall provide a summary of efforts used to meet the diversion requirement and also provide the following documentation:

1. Receipts from the vendor or facility which collected or received each material showing the actual weight or volume of that material;

2. Weight slips/count of material salvaged or reused in current project;

3. A copy of the previously approved WMP for the project adding the actual volume or weight of each material diverted and landfilled;

4. Any additional information the applicant believes is relevant to determining its efforts to comply in good faith with this chapter.

B. Weighing of wastes. Applicants shall make reasonable efforts to ensure that all C and D debris diverted or landfilled are measured and recorded using the most accurate method of measurement available. To the extent practical, all C and D debris shall be weighted by measurement on scales. Such scales shall be in compliance with all State and County regulatory requirements for accuracy and maintenance. For C and D debris for which weighing is not practical due to small size or other considerations, a volumetric measurement shall be used. For conversion of volumetric measurements by weight, the applicant shall use the standardized conversion rates approved by the City for this purpose.

C. The Director shall review the information submitted under Subsection 18.67.070.A to determine whether the applicant has complied with the diversion requirement as follows:

1. If the Director determines that the applicant has fully complied with the diversion requirement applicable to the project, he or she shall cause the full waste diversion deposit to be released to the applicant.

2. If the Director determines that the diversion requirement has not been met, he or she shall return only that portion of the performance security equivalent to the portion of C and D debris actually diverted compared to the portion that should have been diverted according to the WMP. Any portion of the waste diversion deposit not released to the applicant shall be forfeited to the City, and shall be used to further develop environmental sustainability efforts within the City. If the Director determines that the applicant has fully failed to comply with the diversion requirement or if the applicant fails to submit the documentation required by Subsection 18.67.070.A within the required time period, then the entire waste diversion deposit shall be forfeited to the City. All forfeited waste diversion deposits shall be used to further develop environmental sustainability efforts within the City.

18.67.080 – Exemption.

A. Application. If an applicant believes it is infeasible to comply with the diversion requirements of this chapter due to the circumstances delineated in this section, the applicant may apply for an exemption at the time that he or she submits the required WMP. Exemptions may be granted based on the following considerations:

1. An emergency situation exists;

2. Contamination by hazardous substances;

3. Low recyclability of specific materials;

4. Initial tenant or occupant improvements for projects in shell buildings; and

5. Excavated soil and land-clearing debris.

The applicant shall indicate on the WMP the maximum rate of diversion he or she believes is feasible for each material and the specific circumstances that he or she believes make it infeasible to comply with the diversion requirement.

B. Meeting with the Director. The Director shall review the information supplied by the applicant and may meet with the applicant to discuss possible ways of meeting the division requirement. The Director may request that staff from the Department of Public Works Environmental Services Bureau attend this meeting or may require the applicant to request a separate meeting with Department of Public Works Environmental Services Bureau staff. Based on the information supplied by the applicant and, if applicable, Department of Public Works Environmental Services Bureau staff, the Director shall determine whether it is possible for the applicant to meet the division requirement.

C. Granting of exemption. If the Director determines that it is infeasible for the applicant to meet the diversion requirement due to unique circumstances, he or she shall determine the maximum feasible diversion rate for each material and shall indicate this rate on the WMP submitted by the applicant. The Director shall return a copy of the WMP to the applicant marked "Approved Exemption".

D. Denial of exemption. If the Director determines that it is possible for the applicant to meet the diversion requirement, he or she shall inform the applicant in writing. The applicant shall have thirty (30) days to resubmit a WMP form in full compliance with Section 18.67.030. If the applicant fails to resubmit the WMP, or if the resubmitted WMP does not comply with Section 18.67.030, the Director shall deny the WMP.

18.67.090 – Appeal.

The applicant or any interested person may appeal to a Hearing Officer from any ruling of the Director made pursuant to this chapter in accordance with Section 18.67.070. Notice of any appeal from the ruling of the Director must be filed within ten (10) days of the date that such ruling is made. The decision of the Hearing Officer upon such appeal, relative to any matter within the jurisdiction of the Director, shall be final and shall not be appealable to the City Council or to any other City body or official.

CHAPTER 18.68 EARTHQUAKE HAZARD REGULATIONS

CHAPTER 18.68
EARTHQUAKE HAZARD REGULATIONS

18.68.010 – Purpose.

The purpose of this chapter is to define a systematic procedure for identifying and assessing earthquake generated hazards associated with certain existing structures within the City and to develop a flexible, yet uniform and practical procedure for correcting or reducing those hazards to tolerable hazard levels. It is not the purpose of this chapter to preclude or affect the assessment and abatement, pursuant to existing laws, of other hazards which may involve fire, exit, plumbing, electrical, and other such problems with existing buildings.

The provisions of this chapter are intended as minimum standards for structural seismic resistance established primarily to reduce the risk of life loss or injury. Compliance with these standards will not necessarily prevent loss of life or injury or prevent earthquake damage to rehabilitated buildings.

18.68.020 – Scope.

This chapter shall apply to all Type I, Type II and Type III buildings located within the City and built prior to January 9, 1934.

18.68.021 – Definitions.

For the purpose of this chapter, the following definitions shall apply:

"Collar joint" is the vertical space between adjacent wythes and may contain mortar.

"Crosswall" is a wall that meets the requirements of Subsection 18.68.027.D.3. A crosswall is not a shear wall.

"Crosswall shear capacity" is the length of the crosswall times the allowable shear value, v_cL_0.

"Diaphragm edge" is the intersection of the horizontal diaphragm and a shear wall.

"Diaphragm shear capacity" is the depth of the diaphragm times the allowable shear value, v_uD.

"Flexible diaphragm" is a diaphragm of wood construction or other construction of similar flexibility.

"Normal wall" is a wall perpendicular to the direction of seismic forces.

"Open front" is an exterior building wall plane on one side only without vertical elements of the lateral force resisting system in one or more stories.

"Pointing" is the partial reconstruction of the bed joints of a URM wall as defined in Standard No. 24-42. (See Section 18.68.222.)

"UBC" is the 1988 Edition of the Uniform Building Code as published by the International Conference of Building Officials.

"UBC standard" is the 1988 Edition of the Uniform Building Code standard as published by the International Conference of Building Officials.

"Unreinforced masonry bearing wall" is URM wall which provides the vertical support for a floor or roof for which the total superimposed load exceeds one hundred (100) pounds per linear foot of wall.

"Unreinforced masonry (URM) wall" is a masonry wall in which the area of reinforcing steel is less than twenty five percent (25%) of the minimum required by the UBC for reinforced masonry.

"Yield story drift" is the lateral displacement of one level relative to the level above or below at which yield stress is first developed in a frame member.

18.68.022 – Symbols and notations.

For the purposes of this chapter, the following symbols and definitions shall apply:

A = Area of unreinforced masonry pier, square inches.

A_b = Area of the bed joints above and below the test specimen for each in place shear test.

C_p = Numerical coefficient as specified in UBC Section 2312(g) and given in UBC Table 23-P and in Table A-23-A.

D = In plane width dimension of pier, inches, or depth of diaphragm, feet.

DCR = Demand capacity ratio specified in Subsection 18.68.027.D.

Fwx = Force applied to a wall at level x, pounds.

H = Lease clear height of opening on either side of pier, inches.

h/t = Height/thickness ratio of URM wall. Height h is measured between wall anchorage levels, and/or slab on grade.

L = Span of diaphragm between shear walls, or span between shear wall and open front, feet.

L_c = Length of crosswall, feet.

L_i = Effective span for an open front building specified in Subsection 18.68.027.D.8, feet.

PD = Superimposed dead load at the top of the pier under consideration, pounds.

P_{D+L} = Actual dead plus live load in place at the time of testing, pounds.

P_W = Weight of wall, pounds.

$V_a = v_aA$, the allowable shear in any URM pier, pounds.

V_{cb} = Total shear capacity of crosswalls in the direction of analysis immediately below the diaphragm level being investigated, $S\ v_cL_o$, pounds.

V_{ca} = Total shear capacity of crosswalls in the direction of analysis immediately above the diaphragm level being investigated, $S\ v_cL_o$, pounds.

V_r = Pier rocking shear capacity of any URM wall or wall pier, pounds.

V_{wx} = Total shear force resisted by a shear wall at the level under consideration, pounds.

V_p = Shear force assigned to a pier on the basis of its relative shear rigidity, pounds.

V_S = Shear force assigned to a spandrel on the basis of the shear forces in the adjacent wall piers and tributary dead plus live loads.

V_{test} = Load in pounds at incipient cracking for each in-place masonry shear test per Standard No. 24-40. (See Section 18.68.220.)

v_a = Allowable shear stress for unreinforced masonry, psi.

v_c = Allowable shear value for a crosswall sheathed with any of the materials given in Tables A-23-C or A-23-D, pounds per foot.

v_t = Mortar shear strength as specified in Subsection 18.68.024.C.3.d.

v_{to} = Mortar shear test values as specified in Subsection 18.68.024.C.3.d.

v_u = Allowable shear value for a diaphragm sheathed with any of the materials given in Tables A-23-C or A-23-D, pounds per foot.

Σv_uD = Sum of diaphragm shear capacities of both ends of the diaphragm.

$\Sigma\Sigma v_uD$ = For diaphragms coupled with crosswalls $\Sigma\Sigma v_uD$ includes the sum of shear capacities of both ends of diaphragms coupled at and above the level under consideration.

W_d = Total dead load tributary to a diaphragm, pounds.

ΣW_d = Total dead load tributary to all of the diaphragms coupled at and above the level under consideration, pounds.

W_w = Total dead load of an unreinforced masonry wall above the level under consideration or above an open front of a building, pounds.

W_{wx} = Dead load of a URM wall assigned to level x halfway above and below the level under consideration.

18.68.023 – General requirements.

A. General. All buildings shall have a seismic resisting system conforming with UBC Section 2303(b), except as modified by this chapter.

B. Alterations and repairs. Alterations and repairs required to meet the provisions of this chapter shall comply with all other applicable requirements of this title unless specifically provided for in this chapter.

C. Requirements for plans. The following construction information shall be included in the plans required by this chapter:

1. Dimensioned floor and roof plans showing existing walls and the size and spacing of floor and roof framing members and sheathing materials. The plans shall indicate all existing and new crosswalls and their materials of construction. The location of the crosswalls and their openings shall be fully dimensioned or drawn to scale on the plans.

2. Dimensioned wall elevations showing openings, piers, wall classes as defined in Subsection 18.68.024.C.3(f), thicknesses, heights, wall shear test locations, and cracks or damaged portions requiring repairs. The general condition of the mortar joints shall be noted and if and where the joints require pointing. Where the exterior face is veneer, the type of veneer, its thickness and its bonding and/or ties to the structural wall masonry shall also be reported.

3. The type of interior wall and ceiling surfaces.

4. The extent and type of existing wall anchorage to floors and roof when utilized in the design.

5. The extent and type of parapet corrections which were previously performed, if any.

6. Repair details, if any, of cracked or damaged unreinforced masonry walls required to resist forces specified in this chapter.

7. All other plans, sections, and details necessary to delineate required retrofit construction including those items in Section 18.68.028.

18.68.024 – Material requirements.

A. General. All materials permitted by this chapter, including their appropriate allowable design values and those existing configurations of materials specified herein, may be utilized to meet the requirements of this chapter.

B. Existing materials. All existing materials utilized as part of the required force resisting system shall be in sound condition or shall be removed and replaced with new material.

C. Existing unreinforced masonry.

1. General. All unreinforced masonry walls utilized to carry vertical loads or seismic forces parallel and perpendicular to the wall plane shall be tested as specified in this subsection. All masonry that does not meet or exceed the minimum standards established by this chapter shall be removed and replaced by new materials or alternatively shall have its structural functions replaced by new materials and anchored to supporting elements.

2. Lay-up of walls. The facing and backing shall be bonded so that not less than ten percent (10%) of the exposed face area is composed of solid headers extending not less than four (4) inches into the backing. The clear distance between adjacent full-length headers shall not exceed twenty-four (24) inches vertically or horizontally. Where the backing consists of two (2) or more wythes, the headers 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. Wythes of walls not bonded as described above shall be considered as veneer. Veneer wythes shall not be included in the effective thickness used in calculating the height to thickness and the shear capacity of the wall.

3. Mortar.

a. Tests. The quality of mortar in all masonry walls shall be determined by performing in-place shear tests in accordance with Standard No. 24-40. Alternative methods of testing may be approved by the Building Official.

b. Location of tests. The shear tests shall be taken at locations representative of the mortar conditions throughout the entire building, taking into account variations in workmanship at different building height levels, variations in weathering of the exterior surfaces, and variations in the condition of the interior surfaces due to deterioration caused by leaks and condensation of water and/or by the deleterious effects of other substances contained within the building. The exact test location shall be determined at the building site by the engineer in responsible charge of the structural design work. An accurate record of all such tests and their location in the building shall be recorded and these results shall be submitted to the Building and Safety Bureau for approval as part of the structural analysis.

c. Number of tests. The minimum number of tests per class shall be as follows:

i. At each of both the first and top stories, not less than two (2) tests per wall or line of wall elements providing a common line of resistance to lateral forces.

ii. At each of all other stories, not less than one (1) test per wall or line of wall elements providing a common line of resistance to lateral forces.

iii. In any case, not less than one (1) test per one thousand five hundred (1,500) square feet of wall surface nor less than a total of eight (8).

d. Minimum quality mortar.

Mortar shear test values, v_{to}, in psi shall be obtained for each in-place shear test in accordance with the following equation:
$v_{to} = (V_{test} - P_D + {}_L)/A_b$ (024-1)

i. Individual unreinforced masonry walls with consistently less than thirty (30) psi shall be removed or entirely repointed and retested.

ii. The mortar shear strength, v_t, is the value in psi that is exceeded by eighty percent (80%) of all of the mortar shear test values, v_{to}.

e. Collar joints. The collar joints shall be inspected at the test locations during each in-place shear test, and estimates of the percentage of the surfaces of adjacent wythes which are covered with mortar shall be reported along with the results of the in-place shear tests.

f. Unreinforced masonry classes. All existing unreinforced masonry shall be categorized into one (1) or more classes based on shear strength, quality of construction, state of repair, deterioration, and weathering. A class shall be characterized by the allowable masonry shear stress determined in accordance with Subsection 18.68.026.B. Classes shall be defined for whole walls, not for small areas of masonry within a wall.

g. Pointing. All deteriorated mortar joints in unreinforced masonry walls shall be pointed according to Standard No. 24-42. Nothing shall prevent pointing with mortar of all the masonry wall joints before the tests are made.

18.68.025 – Quality control.

A. Pointing. All preparation and mortar pointing shall be done with special inspection.

EXCEPTION: At the discretion of the Building Official, incidental pointing may be performed without special inspection.

B. Masonry shear tests. In-place masonry shear tests shall comply with Standard No. 24-40.

C. Existing wall anchors. Existing wall anchors utilized as all or part of the required tension anchors shall be tested in pullout according to Standard No. 24-41. The minimum number of anchors tested shall be four (4) per floor, with two (2) tests at walls with joists framing into the wall and two (2) tests at walls with joists parallel to the wall, but not less than ten percent (10%) of the total number of existing tension anchors at each level.

D. New bolts. One-fourth (1/4) of all new shear bolts and combined tension and shear bolts in unreinforced masonry walls shall be tested according to Standard No. 24-41.

EXCEPTION: Special inspection may be provided during installation in lieu of testing.

18.68.026 – Allowable design values.

A. Allowable values.

1. Allowable values for existing materials are given in Table A-23-C and for new materials in Table A-23-D.

2. Allowable values not specified in this chapter shall be as specified elsewhere in this title.

   Masonry shear. The allowable unreinforced masonry shear stress, V_a, shall be determined for each masonry class from the following equation: $v_a = 0.1v_t + 5P_D/A$ (026-1)

   The mortar shear test value, v_t, shall be determined in accordance with Subsection 18.68.024.C.3, and not exceed one hundred (100) psi for the determination of V_a.

   The one-third (1/3) increase in allowable values of the Uniform Building Code is not allowed for v_a.

B. Masonry compression. The one-third (1/3) increase in allowable stress of the Uniform Building Code is allowed.

C. Masonry tension. Unreinforced masonry shall be assumed as having no tensile capacity.

D. Existing tension anchors. The allowable resistance values of the existing anchors shall be forty percent (40%) of the average of the tension tests of existing anchors having the same wall thickness and joist orientation. The one-third (1/3) increase in allowable stress of the Uniform Building Code is not allowed for existing tension anchors.

E. Foundations. For existing foundations new total loads may be increased over existing dead load by twenty-five percent (25%). New total dead load plus live load plus seismic may be increased over existing dead load plus live load by fifty percent (50%). Higher values may be justified only in conjunction with a geotechnical investigation.

18.68.027 – Analysis and design.

A. General. Except as modified herein, the analysis and design relating to the structural alteration of existing buildings shall be in accordance with this title.

B. Selection of procedure. Buildings shall be analyzed by the general procedure of Subsection 18.68.027.C which is based on UBC Chapter 23 or, when applicable, buildings may be analyzed by the special procedure of Subsection 18.68.027.D.

C. General procedure.

1. Basis for design. The minimum design seismic forces shall be those determined in accordance with the static lateral force procedure of Subsection 18.68.027.C.1 or the dynamic lateral force procedure of Subsection 18.68.027.C.2.

   Minimum design lateral forces – static force procedure. Buildings shall be analyzed to resist minimum lateral forces assumed to act nonconcurrently in the direction of each of the main axes of the structure in accordance with the following:

   $V_B = \varphi \beta CW$ (027-1) where

   V_B = Design base shear
   W = Total seismic dead load of the building
   ß = Building type coefficient given in Table A-23-E
   φ = Occupancy Load Factor from Table A-23-F
   C = $0.059/_T2/3$
   T = Building period, in seconds, of the structure in the direction of consideration

The product of φ ß C need not exceed 0.13. The building period may be calculated in accordance with the 1988 UBC Method A or Method B. The value of C need not exceed 0.13. The distribution of the design base shear over the height of the building is to be the same as that specified by the 1988 UBC.

2. Minimum design lateral forces – dynamic force procedure. Dynamic analysis procedures when used to determine the seismic demand on the building shall conform with Chapter 23 of the 1988 UBC. Except where approved situs specific response spectra are developed, ground motions used in the analysis shall be consistent with the October, 1988 Seismic Safety Element to the City of Long Beach general plan and applied as follows:

   a. If the analysis utilizes the modal superposition spectral response approach, the five percent (5%) damped spectrum for the appropriate soil at the building site shall be used as the input ground motions. The response of the building shall be normalized by the ratio of the base shear determined from the equivalent static force approach to the base shear determined from the spectral response approach.

   b. If the analysis utilizes a time history (linear elastic or nonlinear) approach, an approved synthetic acceleration time history shall be constructed which is consistent with the five percent (5%) damped spectrum for the appropriate soil at the building site. Such an acceleration time history must have a response spectrum which closely matches the five percent (5%) damped spectrum with no spectral ordinate dipping more than ten percent (10%) below the target spectrum.

3. Lateral forces on elements of structures. Parts or portions of structures shall be analyzed as required in UBC Chapter 23.

   EXCEPTIONS:

   a. Unreinforced masonry walls for which height to thickness ratios do not exceed ratios set forth in Table A-23-B need not be analyzed for out-of-plane loading. Unreinforced masonry walls which exceed the allowable h/t ratios of Table A-23-B shall be braced according to Subsection 18.68.028.E.

   b. Parapets complying with Subsection 18.68.028.F need not be analyzed for out-of-plane loading.

4. Shear walls (in-plane loading). Shear walls shall comply with Subsection 18.68.027.E.

D. Special procedure.

1. Limits for the application of Subsection 18.68.027.D. The special procedure of this subsection may only be applied to buildings with the following characteristics:

   a. Flexible diaphragms at all levels above the base of structure.

   b. A maximum of six (6) stories above the base of the building.

   c. The vertical elements of the lateral force resisting system shall consist predominately of masonry or concrete shear walls.

   d. New vertical elements of the lateral force resisting system consisting of steel braced frames or special moment resisting frames shall have a maximum overall height-to-length ratio of 1.5 to 1.

e. A minimum of two (2) lines of vertical elements of the lateral force resisting system parallel to each axis of the building except for single story buildings with an open front on one (1) side only. (See Subsection 18.68.027.D.8 for open front buildings.)

2. Lateral forces on elements of structures. With the exception of the diaphragm provisions in Subsection 18.68.027.D, elements of structures shall comply with Subsection 18.68.027.C.3.

3. Crosswalls. Crosswalls shall meet the requirements of this subsection.

a. Crosswall definition. A crosswall is a wood-framed wall sheathed with any of the materials described in Tables A-23-C or A-23-D. Spacing of crosswalls shall not exceed forty (40) feet on center measured perpendicular to the direction of consideration, and shall be placed in each story of the building. Crosswalls shall extend the full story height between diaphragms.

EXCEPTIONS:

i. Crosswalls need not be provided at all levels in accordance with Subsection 18.68.027.D.4.b.iv.

ii. Existing crosswalls need not be continuous below a wood diaphragm at/or within four feet of grade provided:

aa. Shear connection requirements of Subsection 18.68.027.D.5 are satisfied at all edges of the diaphragm.

bb. Crosswalls with total shear capacity of 0.08 (W_d interconnect the diaphragm to the foundation.

cc. The demand/capacity ratio of the diaphragm between the crosswalls that are continuous to their foundations shall be calculated as:
DCR = $[0.33W_D + V_{ca}]/2v_uD$;If-.;(027-2)
and DCR shall not exceed 2.5.

b. Crosswall shear capacity. Within any forty (40) feet measured along the span of the diaphragm, the sum of the crosswall shear capacities shall be at least thirty percent (30%) of the diaphragm shear capacity of the strongest diaphragm at or above the level under consideration.

c. Existing crosswalls. Existing crosswalls shall have a length to height ratio between openings of not less than 1.5. Existing crosswall connections to diaphragms need not be investigated as long as the crosswall extends to the framing of the diaphragm above and below.

d. New crosswalls. New crosswall connections to the diaphragm shall develop the crosswall shear capacity. New crosswalls shall have the capacity to resist an overturning moment equal to the crosswall shear capacity times the story height. Crosswall overturning moments need not be cumulative over more than two (2) stories.

e. Other crosswall systems. Other systems such as special moment resisting frames may be used as crosswalls provided that the yield story drift does not exceed one (1) inch in any story.

4. Wood diaphragms.

a. Acceptable diaphragm span. A diaphragm is acceptable if the point (L, DCR) on Figure A-23-1, falls within Regions 1, 2, or 3.

b. Demand-capacity ratios. Demand-capacity ratios shall be calculated for the diaphragm according to the following formulas:

i. For a diaphragm without qualifying crosswalls at levels immediately above or below:
$DCR = 0.33W_d / \Sigma v_u D$(027-3)

ii. For a diaphragm in a single-story building with qualifying crosswalls:
$DCR = 0.33W_d / \Sigma v_u D + V_{cb})$(027-4)

iii. For diaphragms in a multi-story building with qualifying crosswalls in all levels:
$DCR = 0.33 W_d / \Sigma v_u D + V_{cb})$(027-5)

DCR shall be calculated at each level for the set of diaphragms at and above the level under consideration.

iv. For a roof diaphragm and the diaphragm directly below if coupled by crosswalls
$DCR = 0.33(W_d / \Sigma\Sigma v_u D$(027-6)

c. Chords. An analysis for diaphragm flexure need not be made and chords need not be provided.

d. Collectors. An analysis of diaphragm collector forces shall be made for the transfer of diaphragm edge shears into vertical elements of the lateral force resisting system. Collector forces may be resisted by new or existing elements.

e. Diaphragm openings.

i. Diaphragm forces at corners of openings shall be investigated and shall be developed into the diaphragm by new or existing materials.

ii. In addition to calculating demand capacity ratios per Subsection 18.68.027.D.4.b, the demand capacity ratio of the portion of the diaphragm adjacent to an opening shall be calculated using the opening dimension as the span.

iii. Where an opening occurs in the end quarter of the diaphragm span, the quantity $v_u d$ for the demand capacity ratio calculation shall be based on the net depth of the diaphragm.

5. Shear transfer. Diaphragms shall be connected to shear walls with connections capable of developing a minimum force given by the lesser of the following formulas:

$V = 0.20C_pW_d$ (027-7)
using the C_p values in Table A-23-A, or
$V=v_uD$(027-8)

6. Shear walls (in plane loading) – special procedure.

a. Wall story force. The wall story force distributed to a shear wall at any diaphragm level shall be the lesser value calculated as:

i. For buildings without crosswalls, $F_{wx} = 0.13(W_{wx} + W_d/2)$(027-9) but need not exceed
$F_{wx} = 0.13W_{wx} + v_uD$(027-10)

ii. For buildings with crosswalls in all levels:
$F_{wx} = 0.10(W_{wx} + W_d/2)$(027-11)
but need not exceed

$F_{wx} = 0.10(W_{wx} + \Sigma W_d(v_u D/ \Sigma \Sigma v_u D))$(027-12)
and need not exceed
$F_{wx} = 0.10W_{wx} + v_u D$(027-13)

b. Wall story shear. The wall story shear shall be the sum of the wall story forces at and above the level of consideration.
$V_{wx} = \Sigma F_{wx}$ (027-14)

c. Shear wall analysis. Shear walls shall comply with Subsection 18.68.027.E.

d. Moment frames. Moment frames used in place of shear walls shall be designed as required in UBC Chapter 23 except that the forces shall be as specified in Subsection 18.68.027.D.6.a and the interstory drift shall be limited to 0.005 except as further limited in Subsection 18.68.027.E.3.b.

7. Out of plane forces – URM walls.

a. Allowable URM wall height to thickness ratios. The provisions of Subsection 18.68.027.C.3 are applicable except the allowable h/t ratios given in Table A-23-B shall be determined from Figure A-23-1 as follows:

i. In Region 1, h/t ratios for "buildings with crosswalls" may be used if qualifying crosswalls are present in all stories.

ii. In Region 2, h/t ratios for "buildings with crosswalls" may be used whether or not qualifying crosswalls are present.

iii. In Region 3, h/t ratios for "all other buildings" shall be used whether or not qualifying crosswalls are present.

b. Walls with diaphragms in different regions. When diaphragms above and below the wall under consideration have DCRs in different regions of Figure A-23-1, the lesser h/t ratio shall be used.

8. Buildings with open fronts. A building with an open front on one (1) side shall have crosswalls parallel to the open front and shall be designed by the following procedure:

a. Effective diaphragm span, L_i, for use in Figure No. A-23-1 shall be determined in accordance with the following formula:
$L_i = 2[(W_w/W_d) \cdot L + L]$(027-15)

b. Diaphragm demand/capacity ratio shall be calculated as:
$DCR = 0.33(W_d + W_w)/[(v_u D) + V_c]$(027-16)

E. Analysis of vertical elements of the lateral force-resisting system. Applicable to both general procedure and special procedure buildings.

1. Existing URM walls.

a. Flexural rigidity. Flexural components of deflection may be neglected in determining the rigidity of a URM wall.

b. Shear walls with openings. Wall piers shall be analyzed according to the following procedure:

i. For any pier,

aa. The pier shear capacity shall be calculated as:
$V_a = v_aDt$(027-17)

bb. The pier rocking shear capacity shall be calculated as:
$V_r = 0.5P_DD/H$(027-18)

ii. The wall piers at any level are acceptable if they comply with one of the following modes of behavior:

aa. Rocking controlled mode. When the pier rocking shear capacity is less than the pier shear capacity, i.e. $V_r < V_a$ for each pier in a level, forces in the wall at that level, V_{wx}, shall be distributed to each pier, V_p, in proportion to P_DD/H.

For the wall at that level: $V_{wx} < V_r$ (027-19)

bb. Shear controlled mode. Where the pier shear capacity is less than the pier rocking capacity, i.e. $V_a < V_r$ in at least one pier in a level, forces in the wall at that level, V_{wx}, shall be distributed to each pier, V_p, in proportion to D/H.

For each pier at that level:
$V_p < V_a$ (027-20) and
$V_p < V_r$. (027-21)
If $V_p > V_a$ for each pier and $V_p > V_r$ for one or more piers, omit such piers from the analysis and repeat the procedure for the remaining piers, or strengthen and reanalyze the wall.

iii. Masonry pier tension stress. Unreinforced masonry wall piers need not be analyzed for tension stress.

c. Shear walls without openings. Shear walls without openings shall be analyzed as for walls with openings except that V_r, shall be calculated as follows:
$V_r = (0.50P_D + 0.25P_W)D/H$(027-22)

2. Plywood sheathed shear walls. Plywood sheathed shear walls may be used to resist lateral loads for buildings with flexible diaphragms analyzed according to provisions of Subsection 18.68.027.C. Plywood sheathed shear walls may not be used to share lateral loads with other materials along the same line of resistance.

3. Combinations of vertical elements.

a. Lateral force distribution. Lateral forces shall be distributed among the vertical resisting elements in proportion to their relative rigidities, except that moment frames shall comply with Subsection 18.68.027.E.3.b.

b. Moment resisting frames. A moment frame shall not be used with a URM wall in a single line of resistance unless the wall has piers that are capable of sustaining rocking in accordance with Subsection 18.68.027.E.1.b and the frames are designed to carry one hundred percent (100%) of the lateral forces and the interstory drift ratio shall be limited to 0.0025.

18.68.028 – Detailed system design requirements.

A. Wall anchorage.

1. Anchor locations. All unreinforced masonry walls shall be anchored at the roof and floor levels as required in Subsections 18.68.027.C or 18.68.27.D. Ceilings with substantial rigidity and abutting masonry walls shall be connected to walls with tension bolts at a maximum

anchor spacing of six (6) feet. Ceiling systems with substantial mass shall be braced at the perimeter to the roof or floor diaphragms.

2. Anchor requirements. Anchors shall be tension bolts through the wall as specified in Table No. A-23-D, or by an approved equivalent at a maximum anchor spacing of six (6) feet. All existing wall anchors shall be secured to the joists to develop the required forces.

3. Minimum wall anchorage. Anchorage of masonry walls to each floor or roof shall resist a minimum force determined by UBC Section 2312 (g) 2 or two hundred (200) pounds per linear foot, whichever is greater, acting normal to the wall at the level of the floor or roof. Existing wall anchors, installed under previous permits, must meet or must be upgraded to meet the requirements of this chapter.

4. Anchors at corners. At the roof and all floor levels, both shear and tension anchors shall be provided within two (2) feet horizontally from the inside of the corners of the walls.

5. Anchors with limited access. When access to the exterior face of the masonry wall is prevented by proximity of an existing building, wall anchors conforming to Item 6b in Table A-23-D may be used.

B. Diaphragm shear transfer. Shear bolt spacing shall have a maximum bolt spacing of six (6) feet.

C. Collectors. Collector elements shall be provided which are capable of transferring the seismic forces originating in other portions of the building to the element providing the resistance to those forces.

D. Ties and continuity. Ties and continuity shall conform to UBC Section 2312(h)2E.

E. Wall bracing.

1. General. Where a wall height-thickness ratio exceeds the specified limits, the wall may be laterally supported by vertical bracing members per Subsection 18.68.028.E.2 or by reducing the wall height by bracing per Subsection 18.68.028.E.3.

2. Vertical bracing members. Vertical bracing members shall be attached to floor and roof construction for their design loads independently of required wall anchors. Horizontal spacing of vertical bracing members shall not exceed one-half (1/2) the unsupported height of the wall nor ten (10) feet. Deflection of such bracing members at design loads shall not exceed one-tenth (1/10) of the wall thickness.

3. Intermediate wall bracing. The wall height may be reduced by bracing elements connected to the floor or roof. Horizontal spacing of the bracing elements and wall anchors shall be as required by design but shall not exceed six (6) feet on center. Bracing elements shall be detailed to minimize the horizontal displacement of the wall by the vertical displacement of the floor or roof.

F. Parapets. Parapets and exterior wall appendages not conforming to this chapter shall be removed, or stabilized or braced to ensure that the parapets and appendages remain in their original position.

The maximum height of an unbraced unreinforced masonry parapet above the lower of either the level of tension anchors or roof sheathing, shall not exceed one and one-half (1½) times the thickness of the parapet wall. If the required parapet height exceeds this maximum height, a bracing system designed for the force factors specified in UBC Table 23-P for walls shall support the top of the parapet. Parapet corrective work must be performed in conjunction with the installation of tension roof anchors.

The minimum height of a parapet above the wall anchor shall be twelve (12) inches.

EXCEPTION: If a reinforced concrete beam is provided at the top of the wall, the minimum height above the wall anchor may be six (6) inches.

G. Veneer.

1. Unreinforced masonry walls which carry no design loads other than their own weight may be considered as veneer if they are adequately anchored to new supporting elements.

2. Veneer shall be anchored with approved anchor ties, conforming to the required design capacity specified in this title and placed at a maximum spacing of twenty-four (24) inches with a maximum supported area of two (2) square feet.

   EXCEPTION: Existing veneer anchor ties may be acceptable provided the ties are in good condition and conform to the following minimum size, maximum spacing and material requirements.

   Existing veneer anchor ties shall be corrugated galvanized iron strips not less than one (1) inch in width, eight (8) inches in length and one-sixteenth (1/16) of an inch in thickness or equal and shall be located and laid in every alternate course in the vertical height of the wall at a spacing not to exceed seventeen (17) inches on centers horizontally. As an alternate, such ties may be laid in every fourth course vertically at a spacing not to exceed nine (9) inches on centers horizontally.

3. The location and condition of existing veneer anchor ties shall be verified as follows:

   a. An approved testing laboratory shall verify the location and spacing of the ties and shall submit a report to the Building Official for approval as a part of the structural analysis.

   b. The veneer in a selected area shall be removed to expose a representative sample of ties (not less than four) for inspection by the Building Official.

H. Truss and beam supports. Where trusses and beams other than rafters or joists are supported on masonry, independent secondary columns shall be installed to support vertical loads of the roof or floor members. The loads shall be transmitted down to adequate support.

I. Adjacent buildings.

1. Where elements of adjacent buildings do not have a separation of at least five (5) inches, the allowable height/thickness ratios for "buildings with crosswalls" per Table A-23-B shall not be used in the direction of consideration.

2. Where an exterior URM bearing wall does not have a separation of at least five (5) inches and the diaphragm levels of the adjoining structures differ by more than one and one-half (1½) times the wall thickness, supplemental vertical gravity load carrying members shall be added to support the loads normally carried by the wall and such members shall not be attached to the wall. The loads shall be transmitted down to the foundation.

J. Infill frames.

1. General. In addition to other applicable requirements of this chapter, concrete and steel frames shall comply with the special provisions of this section.

2. Infill walls. All infill walls shall be located and dimensioned on the plans and an appropriate repair defined for any observed areas of distress in the frames or infill walls including spalling, cracking or corrosion. Out of plane forces acting on the infill shall be considered unless it is

shown that the infill is tightly grouted to the frame and the h/t ratio between supports is less than sixteen (16).

3. Buildings with reinforced infill can be designed as shear wall building using the force provisions of the Table A-23-E provided that it is shown by conventional rigidity analyses that the building as retrofitted meets the regularity requirements of the 1988 UBC.

4. Buildings with reinforced infill can be designed as shear wall building using the force provisions of the Table A-23-E provided that it is shown by conventional rigidity analyses that the building as retrofitted meets the regularity requirements of the 1988 UBC.

5. Buildings with reinforced infill can be designed as shear wall building using the force provisions of the Table A-23-E provided that it is shown by conventional rigidity analyses that the building as retrofitted meets the regularity requirements of the 1988 UBC.

6. Wythes of infill walls that occur beyond the confining edges of frame columns and beams shall be anchored as veneer to the frame or the confined portion of the infill wall.

18.68.030 – Prima facie hazard grating.

A. All structures covered by this chapter and constructed before January 9, 1934, shall be inspected and graded in accordance with the provisions set forth in this chapter, such inspection to determine the relative prima facie earthquake hazard associated with same, and graded to establish a priority for subsequent correction. Such buildings which are three stories or less in height shall be inspected and graded by the Building Official and all others shall be inspected and graded in accordance with Section 18.68.050. Grading shall consist of an evaluation based upon an examination of the building plans, specifications or reports that are available, a visual inspection and consideration of the occupancy classification and occupant load. The evaluation shall include an analytical evaluation which shall determine the resistance to earthquake forces of the primary structural system of the structure. The analysis shall be based insofar as possible on the same procedures and assumptions used in seismic design of new buildings, and for purposes of evaluation, shall consist of a comparison of the seismic resistance of the existing building to the seismic resistance required of a new building designed and constructed under the building regulations of the 1970 Uniform Building Code, and otherwise identical to the existing building insofar as location, use, configuration, structural system and materials of construction are concerned. Such comparison can be expressed in terms of a capacity ratio R_S defined as follows: $R_S = V_{REQ}/V_{CAP}$

Where V_{CAP} is the lateral force resistive capacity of a particular existing structure, calculated for the critical mode of failure of a significant portion of the building and V_{REQ} is the required lateral force resistive capacity of the same structure calculated for those specified earthquake conditions set forth in the building regulations of the 1970 Uniform Building Code. For the purposes of assessing the lateral force capacity of existing construction, certain stresses, values and procedures will be established as acceptable, such values to be set forth in a specification entitled "Specifications for Assessing the Capacity of Unreinforced Masonry Buildings, Long Beach Department of Development Services," to be prepared by the Building and Safety Bureau, which specifications may be amended from time to time at the discretion of the Department. Assessment of the capacity ratio R_S shall take into account the following elements:

1. Stability of the wall system and vertical framing;

2. Horizontal diaphragm and/or bracing system;

3. Connections;

4. Shear resisting elements;

5. Special hazards, either structural or nonstructural.

B. In the assignment of a building to a particular hazard grade, the Building Official shall first determine its location on a hazardous index which shall reflect relative degrees of hazard. Such hazardous index shall be established in the specifications entitled "Specifications for Assessing the Capacity of Unreinforced Masonry Buildings, Long Beach Department of Development Services," and shall be a function of the capacity ratio R_S as defined in this section, the occupancy classification of the building and an occupancy potential which is a measure of the human exposure in and near the building. Occupancy classification and occupancy potential shall be as set forth in the above-mentioned specifications.

C. Location of a building on the Hazardous Index shall be the determining factor in the assignment of a building to a particular hazard grade. Assignment shall be by the Building Official and shall be in one of the following three hazardous grades if the capacity of the building has been determined to be less than that required under the building regulations of the 1970 Uniform Building Code:

Excessive Hazard Grade I
High Hazard Grade II
Intermediate Hazard Grade III

D. Limits on the Hazardous Index which will determine placement in particular hazard grades shall be as established in the above-mentioned specifications and shall in general limit Excessive Hazard - Grade 1 to approximately ten percent (10%) of the buildings occupying the highest hazards on the Hazardous Index; the High Hazard - Grade II to approximately thirty percent (30%) of the buildings occupying the middle portion of the Hazardous Index; and the Intermediate Hazard - Grade III to approximately sixty percent (60%) of the buildings occupying the lowest hazards on the Hazardous Index.

E. If an assessment results in a capacity virtually equal to that required under the building regulations of the 1970 Uniform Building Code, or if a repair is accomplished to affect conformance with the seismic requirements of the building regulations of the 1970 Uniform Building Code, the building shall be deemed as having no hazards and shall be so classified.

18.68.040 – Special and intermediate hazards.

In addition to evaluation of the primary structural systems, any structural or nonstructural element of the building, including parapets, ornamentation or other appendages attached to the building or any structural or nonstructural architectural, mechanical or electrical system that is determined by reason of lack of attachment, anchorage or condition, to become dangerous to persons in the building or in the vicinity, will be classed as an immediate hazard. Any immediate hazard identified in buildings classified as high or intermediate hazard shall be treated as an excessive hazard and shall be abated under the procedures established for excessive hazard.

18.68.050 – Priority and method of grading.

A. Buildings shall in general be graded on a priority system but in three (3) phases: Phase I shall consist of inspection and grading of all buildings less than four (4) stories in height and within occupancy classifications A, B, C, D and E; Phase II will consist of inspection and grading of all buildings two (2) and three (3) stories in height and classified F, G and H; and Phase III will consist of inspection and grading of all buildings remaining to be graded. Grading of all structures in each phase shall be accomplished insofar as is possible by a date established by the Department, and on that date, owners and interested parties will be promptly notified of the hazard grade in which their building has been placed. Such notification shall give notice to the owner of the hazard grade in which the building is being placed, a procedure to be followed if the owner is in disagreement with the grading, and that the grade assigned will be recorded with the

county recorder after sixty (60) days unless a change in grade has been initiated as set forth in Section 18.68.190.

B. Buildings four (4) stories or more in height shall be placed in the appropriate hazard grade by the Building Official after receipt from the building owner of such information and data as is necessary to adequately grade the building. Such information and data shall be gathered for the owner at his expense by a structural or civil engineer or an architect licensed under the laws of the State and shall be submitted to the Building Official by such dates as he will set consistent with those occupancy classifications established for other buildings as set forth in this section for Phases I, II and III. Notice to require gathering of such information by the owner shall be substantially in the form set forth in Section 18.68.180. The Building Official shall, after reviewing the information and data submitted, place the building in the appropriate hazard grade and shall promptly notify the owner of the hazard grade in which his building has been placed. Failure to provide the Building Official with the required information and data by such established dates will result in placement of the building in Excessive Hazard - Grade I, until such information is submitted and the building is graded in accordance with the provisions of this chapter.

18.68.060 – Calculation of actual lateral force capacity V_{CAP}.

The actual lateral force capacity, V_{CAP}, of a particular structure shall be computed using those values and stresses set forth in specifications entitled "Specifications for Assessing Capacity of Unreinforced Masonry Buildings, Long Beach Department of Building and Safety."

18.68.070 – Hazardous grading and dates of corrective action.

A. Owners of structures that have been graded Excessive Hazard - Grade I will be given notice of the need for corrective action as soon as such grading has been accomplished. Such notification shall take the form of notice of corrective action as set forth in Section 18.68.090.

B. Owners of structures that have been graded High Hazard - Grade II will be notified of the need for corrective action on January 1, 1984, or as soon thereafter as Departmental office procedures will permit. Such notification shall take the form of notice of corrective action as set forth in Section 18.68.090.

C. Owners of structures that have been graded Intermediate Hazard - Grade III will be notified of the need for corrective action on January 1, 1991, or as soon thereafter as Departmental office procedures will permit. Such notification shall take the form of Notice of Corrective Action as set forth in Section 18.68.090.

18.68.080 – Hazardous grading subject to change.

A. Buildings placed in a particular hazardous grade may be changed to a lesser grade if corrective repairs are undertaken and accomplished. Hazardous grading may also be changed when competent engineering data is submitted substantiating such a change. Such data may consist of analytical assessments, tests, data substantiating a higher capacity ratio or a modification of use or occupancy potential. Corrective repair plans and/or data substantiating a change in hazardous grading shall be prepared by a structural or civil engineer or architect licensed under the laws of the State to practice said profession. Partial repair designed to correct or strengthen individual and/or critical elements of a building will be permitted provided a suitable plan indicating the method of total and eventual correction and the schedule of expected dates of correction is submitted and the method of eventual correction is approved. Buildings so repaired will be regarded reflecting repairs so accomplished.

B. Complete repair and removal from any hazardous classification will be deemed to have been accomplished when the building has been repaired in accordance with this chapter or with the provisions for repair to remove structures from hazardous classifications in the "Specifications for

Assessing the Capacity of Unreinforced Masonry Buildings, Long Beach Department of Building and Safety."

18.68.090 – Notice of corrective action.

After completion of grading, the Building Official shall send to owners of buildings deemed to be Excessive Hazard - Grade I, a notice of corrective action via certified United States mail. Owners of structures that have been graded High Hazard - Grade II and Intermediate Hazard - Grade III, will be sent such a notice at such time as specified in Section 18.68.070. This notice shall be in substantially the following form:

NOTICE OF CORRECTIVE ACTION

PLEASE TAKE NOTICE that an inspection and evaluation of your structure located at:

Indicates that said structure carries an (excessive, high, intermediate) hazard of major damage in the event of earthquake which would endanger the safety of persons and property located in, on or about said structure at the time of such event. Within sixty (60) days from the date of this notice you shall present to this office a plan of action for reducing the earthquake hazard associated with said structure to an acceptable level.

An extension of the aforesaid sixty (60) day period may be obtained, for good cause shown, by requesting same in writing filed with this office at least seven (7) calendar days prior to the expiration of said sixty (60) day period. Such request shall be accompanied by a written statement of your contemplated action, the accomplishments toward same up to the time of the request, an estimate of the time required to complete the formulation of your proposed plan of action, and the name and address of the engineer, or architect, if any, whom you may have engaged.

In the event your proposed plan of action contemplates repair or some action other than abandonment and demolition, within one hundred twenty (120) calendar days, you shall submit to this office proposed repairs or strengthening measures which will increase the lateral force withstanding capability of the structure to a level commensurate with the acceptable level of earthquake hazard for your prospective use or occupancy. Information as to the magnitude of the lateral force withstanding capability associated with your structure in its present condition, as well as information as to proposed repairs or strengthening measures intended to increase the lateral force withstanding capability, shall be prepared by a structural or civil engineer or architect licensed under the laws of the State of California to practice said profession.

An extension of the aforesaid one hundred twenty (120) days may be granted for good cause shown by requesting same in writing filed with this office at least seven (7) calendar days prior to the expiration of the said one hundred twenty (120) day period. Such request shall be accompanied by a written statement explaining the reason for such an extension and an estimate of the date on which plans will be completed, the degree to which plans have already been completed, and other information which will document the fact that work is progressing.

In the event abandonment and demolition is contemplated, a date certain for such abandonment and demolition shall be submitted to the Building Official for evaluation and approval.

A copy of the ordinance, by authority of which this notice is sent, may be obtained from the office of the City Clerk, upon payment of an appropriate fee.

18.68.100 – Application for order of abatement of nuisance.

A. In the event the owner of a structure is notified pursuant to Section 18.68.090 and a plan of action satisfactory to the Building Official is not presented within sixty (60) days after the notice

has been mailed or within such extension of time as may have been granted in writing by the Building Official; or if the proposed plan of action, contemplated repair, or some action other than abandonment and demolition, has not been submitted and agreed upon by the Building Official within the one hundred twenty (120) days provided in Section 18.68.090 or within such extension of time as the Building Official may have granted; then the Building Official shall apply in writing to the Board of Examiners, Appeals and Condemnation for an order declaring the structure to be a nuisance and ordering the Certificate of Occupancy to be revoked, or that it be demolished or repaired in a manner satisfactory to the Building Official, all by a date certain. The written application shall set forth in the form of factual allegations all facts which, if proven, are necessary to justify an order of condemnation, including, but not limited to the following:

1. The location and legal description of the structure;

2. A concise calculation sheet indicating the ratio R_S for each of the elements of the structural system;

3. The structure's present occupancy;

4. The date upon which the owner of the structure was notified pursuant to Section 18.68.090;

5. A statement as to whether the structure owner has submitted a plan of action pursuant to Section 18.68.090;

6. The date certain by which the structure must be repaired or demolished, in the Building Official's opinion, in order to keep the earthquake hazard associated with it at or below the applicable tolerable level.

B. A copy of the written application shall be mailed by certified United States mail to the person to whom the notice of Section 18.68.090 was mailed.

18.68.110 – Hearing by Board.

In the event the Building Official files an application pursuant to Section 18.68.100, he shall set a date and time for a hearing before the Board of Examiners, Appeals and Condemnation in accordance with Section 18.20.130.

18.68.120 – Appeals to City Council.

Whenever the owner of any structure is aggrieved by any final order of the Board of Examiners, Appeals and Condemnation, dealing with the abatement of a nuisance as provided in this chapter, such owner may within five (5) days of notice of such ruling or act appeal to the City Council as provided in Section 18.20.140.

18.68.130 – Owner responsibility to demolish structure.

In the event the Board of Examiners, Appeals and Condemnation orders a structure demolished, immediately upon the effective date of its order, the structure's owner shall arrange for the vacation and demolition of the structure within sixty (60) days after the Board's order becomes effective, unless such order is modified or reversed by the City Council or is stayed by a court of competent jurisdiction. Should the structure owner fail to inform the Building Official within five (5) days after the Board's order becomes effective that such arrangements have been made or should the owner's scheduled demolition not in fact be completed within the aforesaid sixty (60) day period, then the Building Official may arrange for the demolition of the subject structure and impose a lien upon the property for the costs of same.

18.68.135 – Landmark structures – Alternatives to demolition.

Upon receipt of an application for a permit to demolish a landmark building to comply with the provisions of this chapter, the Building Official shall request the City Clerk to present such application before the City Council at their next scheduled meeting. City Council shall thereupon set a public hearing not less than ten (10) nor more than thirty (30) days from the date the application is presented. On the date thus fixed, or on the date to which the hearing has been subsequently continued, City Council shall proceed to hear testimony and receive evidence relating to the matter. At the conclusion of the hearing, City Council shall make a determination on the method of abating the earthquake hazardous conditions of the building based upon the estimated comparative costs of seismic rehabilitation and demolition, any financial assistance programs that may be available to the owner for rehabilitation, the potential life safety risks involved, or any other pertinent information. Following the hearing, the City Council may order demolition. Alternatively, the City Council may consider (1) ordering the building vacated and secured against unlawful entry, (2) barricading the pedestrian areas surrounding the building subject to hazards from parts of the building dislodged in an earthquake, and/or (3) allowing additional time to strengthen the building. In the event authorization is not granted for a permit to demolish and/or an alternative is ordered, all demolition permit processing fees submitted by the applicant shall be refunded and the applicant shall be deemed relieved of any further responsibility to demolish the structure under this chapter except as may be provided in the alternate permit issued.

18.68.140 – Notice of pending order of demolition.

A. In the event the Board orders the demolition of the subject structure by a date certain which is three (3) months or more after the effective date of the order, and the order is not modified or reversed by the City Council or is not stayed by a court of competent jurisdiction, the Building Official shall prepare a notice of pending order of demolition and arrange for the recordation of same in the office of the county recorder of Los Angeles County. The notice shall be in substantially the following form:

NOTICE OF PENDING
ORDER OF DEMOLITION

TO WHOM IT MAY CONCERN:

NOTICE IS HEREBY GIVEN that by order of the Board of Examiners, Appeals and Condemnation of the City of Long Beach, State of California, dated _____, 19_____, that certain structure now standing at
and described generally as
must and shall be demolished on or before _____ 19_____.

A certified copy of said order may be obtained from the office of the Department of Development Services, Building and Safety Bureau, of the City of Long Beach upon the payment of the appropriate fee. If said structure is not demolished in accordance with the aforesaid order, the same may be demolished by the City of Long Beach and the costs therefore assessed as a lien upon the land upon which the structure stood. A lien in the amount of $_____ in favor of the City of Long Beach is hereby assessed against said property for the costs of recording this notice.

B. The notice shall be recorded under the names of each and every person to whom the notice of Section 18.68.090 was mailed. The structure's owner may pay the recording fees for the aforesaid notice and thereby avoid the imposition of lien for same against the property.

18.68.150 – Owner responsibility to accomplish hazard reduction measures.

In the event the Board or the City Council certifies to the validity of any or all of any measures the owner has proposed as a means of reducing the earthquake hazard, and finds that the accomplishment of such measures will reduce the earthquake hazard associated with the structure

to or below the applicable tolerable level, it shall order the owner to immediately initiate the accomplishment of such measures and to complete the same within a reasonable time. The Board or the City Council shall designate in its order, based on evidence presented to it during the hearing, that date certain which represents a reasonable time in its opinion for the accomplishment of the proposed measures.

18.68.160 – Jurisdiction of Board or Council over certain cases.

The Board or the City Council shall retain jurisdiction over cases in which it has approved owner-proposed measures for reducing earthquake hazard until such measures have been timely accomplished. In the event written evidence of the completion of the approved measures is not presented to the Board or the City Council within ten (10) days after the designated date for the completion of such measures shall have passed, the Board or the City Council may revise its decision and order the immediate vacation and demolition of the structure. The Board or City Council may consider a time extension for the completion of the proposed measures if, prior to said date, the structure's owner has so applied. Any application for such an extension shall be in writing, setting forth what has actually been accomplished, what remains to be done, and the reasons for the requested extension. Should the Board or the City Council conclude that good cause has been shown for an extension, it may grant such an extension in writing for a period deemed necessary to complete the approved repairs.

18.68.170 – Hearing—Failure of owner to proceed in good faith.

In the event the Building Official or any interested person presents written affidavits to the Board or the City Council indicating the owner is not proceeding in good faith to timely accomplish any measures approved by the Board or the City Council in its original decision and order, the Board or City Council shall, on ten (10) days' written notice mailed via certified United States mail to the owner of the structure, schedule and conduct a hearing on the matter. At such hearing, evidence, oral and written, may be presented as in the original hearing, and if the Board or the City Council is convinced that the owner is not proceeding in good faith to timely carry out its original order, then it shall revoke the order and order instead the immediate vacation and demolition of the structure. Written affidavits shall not, however, be received by the Board or the City Council under this section until at least fifty percent (50%) of the time allowed in its original order has expired.

18.68.180 – Notification to owners of buildings four stories or more in height.

Pursuant to Section 18.68.050, notification shall be sent via certified United States mail to owners of buildings four (4) stories or more in height, on such dates as are determined in Section 18.68.050. Such notification shall require the owner to have gathered and submitted to the Building Official information and data relating to the building's capabilities to withstand earthquake forces in sufficient detail to permit grading of the building in accordance with Section 18.68.030. Such information and data shall be gathered by a structural or civil engineer or architect licensed under the laws of the State. The notification shall state the date by which the information and data shall be transmitted to the Building Official, and that failure to so transmit shall result in arbitrarily placing the building in the Excessive Hazard – Grade I category.

18.68.190 – Notice of county recorder.

Upon expiration of the sixty (60) day period after notification to owners and interested parties of the hazardous grade in which their building is being placed, all in accordance with Section 18.68.050, and if such hazardous grading has not been changed or required data substantiating a change has not been submitted as set forth in Section 18.68.080, the Building Official shall prepare and cause to be recorded with the county recorder a certificate stating that the building has been graded and assigned the particular hazardous grade determined under Section 18.68.030. When and if all required repairs are made to the building and it is removed from the hazardous grading, or certain corrective action is taken to change it to a different grade, the Building Official shall cause to be

recorded with the county recorder records indicating the removal from said hazardous grading or reflecting the change to the different grade.

18.68.200 – Figure No. A-23-1.

Acceptable diaphragm span is shown in Figure A-23-1.

18.68.210 – Tables A-23-A through A-23-F.

Force factors and material values are shown in Tables A-23-A through A-23-F.

18.68.220 – Standard No. 24-40, in-place masonry 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 the same wythe. The head joint opposite the loaded end of the test brick shall be carefully excavated and cleared. The brick adjacent to the loaded end of the test brick shall be carefully removed by sawing or drilling and excavating to provide space for a hydraulic ram and steel loading blocks. Steel blocks, the size of the end of the brick, shall be used on each end of the ram to distribute the load to the brick. The blocks shall not contact the mortar joints. The load shall be applied horizontally, in the plane of the wythe, until either a crack can be seen or slip occurs. The strength of the mortar shall be calculated by dividing the load at the first crack or movement of the test brick by the nominal gross area of the sum of the two (2) bed joints.

18.68.221 – Standard No. 24-41, tests of anchors in unreinforced masonry walls.

A. Existing Anchors. The test apparatus shall be supported on the masonry wall at a minimum distance of the wall thickness from the anchor tested. Existing wall anchors shall be given a preload of three hundred (300) pounds prior to establishing a datum for recording elongation. The tension test load reported shall be recorded at one-eighth (1/8) 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.

FIGURE NO. A-23-1.

ACCEPTABLE DIAPHRAGM SPAN

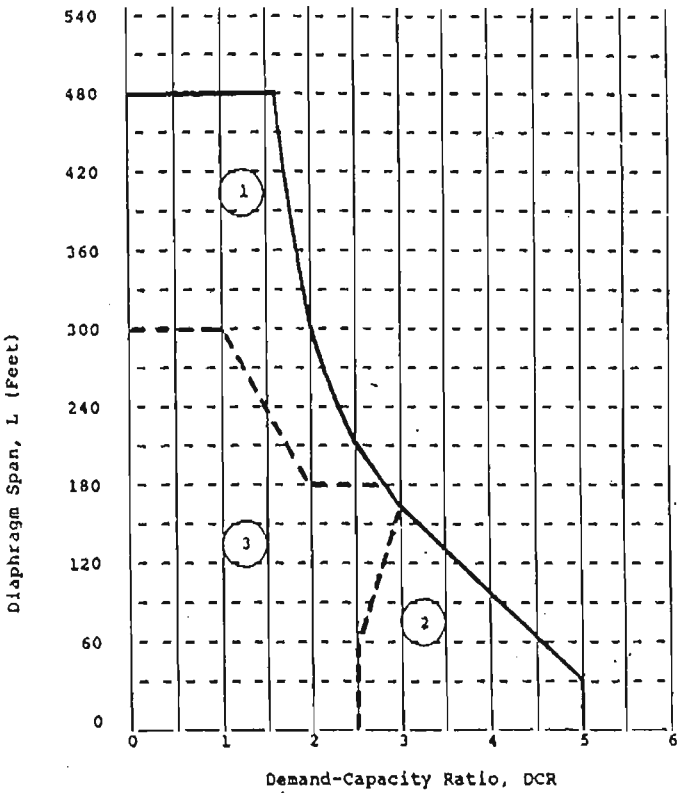


TABLE NO. A-23-A
HORIZONTAL FORCE FACTOR C_p

CONFIGURATION OF MATERIALS	C_p
Roofs with straight or diagonal sheathing and roofing applied directly to the sheathing, or floors with straight tongue and groove sheathing.	0.5
Diagrams with double or multiple layers of Boards with edges offset and blocked plywood systems.	0.74

TABLE NO. A-23-B
ALLOWABLE VALUE OF HEIGHT-THICKNESS RATIO OF
UNREINFORCED MASONRY WALLS

Wall Types	Buildings with Crosswalls[1]	All Other Buildings
Walls of one-story buildings	16[2,3]	13
First-story wall of multi-story building	16	15
Walls in top story of multi-story buildings	14[2,3]	9
All other walls	16	13

[1] Applies to the Special Procedures of Subsection 18.68.027.D only. See Subsection 18.68.027.D.7 for other restrictions.
[2] This value of height-to-thickness ratio may be used only where mortar shear tests in accordance with Section 18.68.024 establish a tested mortar shear strength, v_t, of not less than one hundred (100) psi or where the tested mortar shear strength, v_t, is not less than sixty (60) psi and a visual examination of the collar joint indicates not less than fifty percent (50%) mortar coverage.
[3] Where a visual examination of the collar joint indicates not less than fifty percent (50%) mortar coverage and the tested mortar shear strength, v_t, when established in accordance with Section 18.68.024 is greater than thirty (30) psi but less than sixty (60) psi, the allowable height-to-thickness ratio may be determined by linear interpolation between the larger and smaller ratios in direct proportion to the tested mortar shear strength, v_t.

TABLE NO. A-23-C
ALLOWABLE VALUES FOR EXISTING MATERIALS

	EXISTING MATERIALS OR CONFIGURATIONS OF MATERIALS[1]	ALLOWABLE VALUES
1.	HORIZONTAL DIAPHRAMS[4]	
a.	Roofs with straight sheathing and roofing applied directly to the sheathing.	100 lbs. per foot for seismic shear
b.	Roofs with diagonal sheathing and roofing applied directly to the sheathing.	250 lbs. per foot for seismic shear
c.	Floors with straight tongue-and-groove sheathing.	100 lbs. per foot for seismic shear
d.	Floors with straight sheathing and finished wood flooring with Board edges offset or perpendicular	500 lbs. per foot for seismic shear
e.	Floors with diagonal sheathing and finished wood flooring.	600 lbs. per foot for seismic shear
2.	CROSSWALLS[2,4]	
a.	Plaster on wood or metal lath	Per side: 200 lbs. per foot for seismic shear
b.	Plaster on gypsum lath	175 lbs. per foot for seismic shear
c.	Gypsum wall Board, unblocked edges	75 lbs. per foot for seismic shear
d.	Gypsum wall Board, blocked edges	125 lbs. per foot for seismic shear
3.	EXISTING FOOTINGS, WOOD FRAMING, STRUCTURAL STEEL, AND REINFORCED CONCRETE	
a.	Plain concrete footings	F'c = 1500 psi unless otherwise shown by tests[3]
b.	Douglas fir wood	Allowable stress same as No. 1 D.F.[3]
c.	Reinforcing steel	f_t = 18,000 lbs. per square inch

		maximum.[3]
d.	Structural steel	f_t = 20,000 lbs. per square inch maximum.[3]

[1] Bolts to be tested as specified in Section 18.68.025.
[2] Bolts to be (-inch minimum in diameter.
[3] Drilling for bolts and dowels shall be done with an electric rotary drill. Impact tools shall not be used for drilling holes or tightening anchors and shear bolt nuts.
[4] A one-third increase in allowable stress is not allowed.
[5] Stresses given may be increased for combinations of loads as specified in the Uniform Building Code.

TABLE A-23-E
$^{\beta}$ Factors

SYSTEM	β
A. URM Bearing Wall Building	1.0
B. Ordinary Steel Moment Frame	
1. Without infill (after removal of infill)	.065(1)
2. Clay tile infill	(3)
3. Unreinforced masonry or concrete infill	0.65(2)
4. Reinforced masonry or concrete infill	0.80(2)
C. Ordinary Concrete Moment Frame	
1. Without infill (after removal of infill)	0.65(1)
2. Clay tile infill	(3)
3. Unreinforced masonry or concrete infill	0.65(2)
4. Reinforced masonry or concrete infill	0.80(2)

Notes:
Editor's note—
The shear capacity of frame columns adjacent to (1) infill walls shall be capable of resisting story shears using (= 1.0.
Editor's note—
Where partial infills are used to resist the story (2) shear, the shear capacity of frame columns adjacent to partial infill walls shall be capable of resisting story shears using (= 1.0.
Editor's note—
Clay tile infill may not be considered for resisting (3) building lateral forces. Hence, if the infill is clay tile, either it needs to be removed and replaced with reinforced concrete or masonry (and a (of 0.80 utilized) or the infill can remain in place (provided it is protected from becoming a falling hazard) and the frame is qualified with a (of 0.65.

TABLE A-23-F
φ OCCUPANCY LOAD FACTOR

OCCUPANT LOAD*	φ
100 or more	1.25
Less than 100	1.0

Editor's note—
The Occupant Load shall be defined as specified in the * 1985 UBC Section 3302(a)

B. Combined shear and tension bolts. Combined shear and tension bolts embedded in unreinforced masonry walls shall be tested using a torque calibrated wrench to the following minimum torques:

½-inch-diameter bolts — 40 foot lbs.

⅝-inch-diameter bolts — 50 foot lbs.

¾-inch-diameter bolts — 60 foot lbs.

All nuts shall be installed over malleable iron or plate washers when bearing on wood and heavy cut washers when bearing on steel.

18.68.222 – Standard No. 24-42, pointing of unreinforced masonry walls.

The old or deteriorated mortar should be cut out, by means of a toothing chisel or nonimpact power tool to a uniform depth of three-fourths-inch, or until sound mortar is reached. Care must be taken not to damage the brick edges. After cutting is completed, remove all loose material with a brush, air, or water stream.

Mortar mix shall be type "N" or "S" proportions as called for in the construction specifications, preferably as close to the original mortar proportion as possible. Prehydrate pointing mortar to reduce excessive shrinkage. To prehydrate mortar, thoroughly mix all ingredients dry, then mix again, adding only enough water to produce a damp unworkable mix which will retain its form when pressed into a ball. After keeping mortar in this dampened condition for one (1) to one and one-half (1½) hours, add sufficient water to bring it to the proper consistency that is somewhat drier than conventional masonry mortar. To ensure good bond, wet the mortar joints thoroughly before applying pointing mortar. The joints should not be visibly wet with free-standing water which must be absorbed into the wall. Pack mortar tightly in thin layers (one-fourth inch maximum) until the joint is filled, then tool to a smooth surface to match original profile.

CHAPTER 18.69 VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING WOOD FRAME RESIDENTIAL BUILDINGS WITH WEAK CRIPPLE WALLS AND UNBOLTED SILL PLATES

CHAPTER 18.69
VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING WOOD FRAME RESIDENTIAL BUILDINGS WITH WEAK CRIPPLE WALLS AND UNBOLTED SILL PLATES

18.69.010 – General.

A. Purpose. The provisions of this chapter are intended to promote public safety and welfare by reducing the risk of earthquake-induced damage to existing wood-framed residential buildings. The voluntary minimum standards contained in this chapter shall substantially improve the seismic performance of these residential buildings but will not necessarily prevent all earthquake damage. When fully followed, these standards will strengthen the portion of the structure that is most vulnerable to earthquake damage.

Prior to 1960, most wood frame residential buildings were built with raised wood floors supported by short wood stud walls known as cripple walls. These cripple walls are typically braced with weak seismic materials such as portland cement plaster or horizontal wood siding. In addition, wood frame buildings built under Building Codes in effect prior to July 1938 were not required to be bolted to their foundations. Recent earthquakes have shown that if a building has weak cripple walls or is unbolted, it may fall off its foundation even in moderate earthquakes.

Fallen buildings have collapsed, caught fire or needed extensive repairs to restore their occupancy.

This chapter sets prescriptive standards for strengthening of under floor enclosures, if permitted by the Building Official, without requiring construction documents prepared by a registered design professional licensed by the State of California. This chapter also provides a design standard for the use of alternate materials or an alternate method of construction in lieu of the prescriptive standards.

Construction documents for strengthening using alternate materials or methods shall be prepared by a registered design professional licensed by the State of California.

B. Scope. The provisions of this chapter may be applied to light wood frame Group R occupancies, with no more than four (4) dwelling units when they contain one (1) or more of the structural weaknesses specified in Section 18.69.030.

The provisions of this chapter do not apply to the buildings or elements thereof listed below. These buildings or elements require analysis by a registered design professional licensed by the State of California in accordance with Chapter 16 of the California Building Code adopted in Chapter 18.40 or other approved standards to determine appropriate strengthening.

1. Buildings with a lateral-force-resisting system using poles or columns embedded in the ground.

2. Cripple walls that exceed four (4) feet in height.

3. Buildings exceeding three (3) stories in height and any three (3) story building with cripple wall studs exceeding fourteen (14) inches in height.

4. Buildings, or portions thereof, constructed on a concrete slab on grade or constructed on or into a slope steeper than one (1) unit vertical in three (3) units horizontal (33.3% slope).

5. Buildings where the Building Official determines that conditions exist that are beyond the scope of the requirements of this chapter.

The standard details approved by the Building Official and these prescriptive provisions are not intended to be the only acceptable strengthening methods permitted. Alternate details and methods shall be permitted when approved by the Building Official. Qualified historical buildings shall be permitted to use alternate building regulations or deviations from this chapter in order to preserve their original or restored architectural elements and features. See California Code of Regulations, Title 24, Part 8 (California Historical Building Code) for these standards.

C. Alternative design procedures. When analysis by a registered design professional is required or provided for a building within the scope of this chapter, such analysis shall be in accordance with all requirements of this code except as provided in this chapter. The design shall provide strengthening for any structural weakness listed in Section 18.69.030 that is at least equivalent to that provided by the prescriptive requirements of this chapter with respect to strength, deflection and capacity. The Building Official may require that sufficient evidence be submitted to substantiate such equivalence. The base shear may be determined in accordance with the following:

V = 0.1375 W(69-1)

Where:
V = the total design lateral force or shear at the base
W = the total seismic dead load defined in Section 12.7.2 of ASCE 7-05.

18.69.020 – Definitions.

For the purpose of this chapter, in addition to the applicable definitions, symbols and notations in this code, certain additional terms are defined as follows:

"Adhesive anchor" means a 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" means a metal plate or plates used to connect a sill plate to the side of a concrete or masonry stem wall.

"Cripple wall" means a wood-framed stud wall extending from the top of the foundation to the underside of the lowest floor framing.

"Expansion anchor" means a mechanical fastener placed in hardened concrete or assembled masonry, designed to expand in a self-drilled or pre-drilled hole of a specified size and engage the sides of the hole in one or more locations to develop shear and/or tension resistance to applied loads without grout, adhesive or drypack.

"Perimeter foundation" means a foundation system which is located under the exterior walls of a building.

"Snug-tight" is as tight as an individual can torque a nut on a bolt by hand using a wrench with a ten (10) inch long handle and the point at which the full surface of the plate washer is contacting the wood member and slightly indents the wood surface.

"Unreinforced masonry" means and includes adobe, burned clay, concrete or sand-lime brick, hollow clay or concrete block, hollow clay tile, rubble, cut stone, and unburned clay masonry walls in which the area of reinforcement is less than fifty percent (50%) of the minimum steel ratios required for reinforced masonry.

18.69.030 – Structural weaknesses.

A. Sill plates or floor framing which are supported directly on the ground without an approved foundation system.

B. A perimeter foundation system which is constructed of wood posts supported on isolated pad footings.

C. Perimeter foundation systems that are not continuous.

EXCEPTIONS:

1. Existing single-story exterior walls not exceeding ten (10) feet in length forming an extension of floor area beyond the line of an existing continuous perimeter foundation.

2. Porches, storage rooms and similar spaces not containing fuel burning appliances.

D. A perimeter foundation system which is constructed of unreinforced masonry.

E. Sill plates which are not connected to the foundation or are connected with less than what is required by Subsection 18.69.040.C.1.

F. Cripple walls that are not braced in accordance with the requirements of Subsection 18.69.040.D and Table 69-A.

18.69.040 – Strengthening requirements.

A. General.

1. Scope. The structural weaknesses noted in Section 18.69.030 shall be strengthened in accordance with the requirements of this section. Strengthening work shall be allowed to include both new construction and alteration of existing construction. Except as provided herein, all strengthening work and materials shall comply with the applicable provisions of this code. Alternate methods of strengthening shall be allowed provided such systems are designed by a registered design professional and approved by the Building Official.

2. Condition of existing wood materials. All existing wood materials which will be a part of the strengthening work shall be in a sound condition and free from defects which substantially reduce the capacity of the member. Any wood material found to contain fungus infection shall be removed and replaced with new material. Any wood material found to be infested with insects or to have been infested shall be strengthened or replaced with new materials to provide a net dimension of sound wood at least equal to its undamaged original dimension.

3. Floor joists not parallel to foundations. Floor joists framed perpendicular or at an angle to perimeter foundations shall be restrained by either a nominal two-inch wide continuous rim joist or a nominal two (2) inch wide full depth blocking between alternate joists in one- and two-story buildings, and between each joist in three (3) story buildings. Blocking for multistory buildings must occur at each joist space above a braced cripple wall panel.

Existing connections at the top edge of an existing rim joist or blocking need not be verified. The bottom edge connection to either the foundation sill plate or top plate of a cripple wall shall be verified unless a supplemental connection is provided. The minimum existing bottom edge connection shall consist of 8d toenails spaced six (6) inches apart for a continuous rim joist or three (3) 8d toenails per block. When this minimum bottom edge connection is not present, or is not verified, a supplemental connection shall be provided.

When an existing continuous rim joist or the minimum existing blocking does not occur, new one and one-eighth (1-1/8) inch wood structural panel blocking installed tightly between floor joists and nailed with 10d common nails at four (4) inches on center to the sill or wall top plate shall be provided at the inside face of the cripple wall. In lieu of one and one-eighth (1-1/8)

inch wood structural panel blocking, tight-fitting, full or near full depth two (2) inches nominal width lumber blocking shall be allowed provided it does not split during installation. New blocking is not required where it will interfere with vents or plumbing that penetrates the wall.

4. Floor joists parallel to foundations. Where existing floor joists are parallel to the perimeter foundations, the end joist shall be located over the foundation and, except for required ventilation openings, shall be continuous and in continuous contact with any existing foundation sill plate or top plate of the cripple wall. Existing connections at the top edge connection of the end joist need not be verified; however, the bottom edge connection to either the foundation sill plate or the top plate of a cripple wall shall be verified unless a supplemental connection is provided.

   The minimum bottom edge connection shall be 8d toenails spaced six (6) inches apart. If this minimum bottom edge connection is not present or is not verified, a supplemental connection shall be provided.

5. Supplemental connections. Supplemental connections shall provide sufficient strength to transfer the seismic forces. Framing anchors of minimum eighteen (18) gage steel and twelve (12) approved fasteners may be considered to meet this requirement when spaced thirty-two (32) inches on center for one (1) story buildings, twenty-four (24) inches on center for two (2) story buildings and sixteen (16) inches on center for three (3) story buildings.

   EXCEPTIONS: A supplemental connection is not required when:

   a. The structural wood panel sheathing extends from the sill plate to the rim joist or blocking above.

   b. The floor sheathing is nailed directly into the sill or top plate of the cripple wall.

6. Single top plate ties. When a single top plate exists in the cripple wall, all end joints in the top plate shall be tied. Ties shall be connected to each end of the discontinuous top plate and shall be equal to one of the following:

   a. Three (3) inch by six (6) inch by 0.036-inch thick galvanized steel and nailed with six (6) 8d nails at each end.

   b. One and one-half (1½) inch by twelve (12) inch by 0.058-inch galvanized steel nailed with six (6) 16d nails at each end.

   c. Two (2) inch by four (4) inch by twelve (12) inch wood blocking nailed with six (6) 16d nails at each end.

B. Foundations.

1. New perimeter foundations. New perimeter foundations shall be provided for structures with the structural weaknesses noted in Subsections 18.69.030.A and 18.69.030.B. Soil investigations or geotechnical studies are not required for this work unless the building shows signs of excessive settlement or creep.

2. Foundation evaluation by a registered design professional. Partial perimeter foundations or unreinforced masonry foundations shall be evaluated by a registered design professional for the force levels noted in Formula (69-1) of this chapter. Test reports or other substantiating data to determine existing foundation material strengths shall be submitted for review. When approved by the Building Official, these foundation systems may be strengthened in accordance with the recommendations included with the evaluation in lieu of being replaced.

EXCEPTION: In lieu of testing existing foundations to determine material strengths and when approved by the Building Official, a new nonperimeter foundation system, designed for the forces noted in Formula (69-1) of this chapter, may be used to resist all exterior wall lateral forces.

3. Details for new perimeter foundations. All new perimeter foundations shall be continuous and constructed according to the standards for new buildings.

   EXCEPTIONS:

   a. When approved by the Building Official, the existing clearance between existing floor joists or girders and existing grade below the floor need not comply with Section 2304.11.2.1 of the California Building Code adopted in Chapter 18.40. This exception shall not be permitted when buildings are relocated on new foundations.

   b. When approved by the Building Official, and when designed by a registered design professional, partial perimeter foundations may be used in lieu of a continuous perimeter foundation.

C. Foundation sill plate anchorage.

1. Existing perimeter foundations. When the building has an existing continuous perimeter foundation, all perimeter wall sill plates shall be connected to the foundation in accordance with Table 69-A and this section. Anchors shall be installed with the plate washer installed between the nut and the sill plate. The nut shall be tightened to a snug-tight condition after curing is complete for adhesive anchors and after expansion wedge engagement for expansion anchors.

   The installation of nuts on all anchors shall be subject to verification by the Building Official. Torque testing shall be performed for twenty percent (20%) of all adhesive or expansion anchors.

   Minimum test values shall be thirty (30) foot-pounds for one-half (1/2) inch and forty (40) foot-pounds for five-eighths (5/8) inch diameter anchors.

   Anchor side plates shall be permitted when conditions prevent anchor installation vertically through the sill plate. Anchor side plates shall be spaced as required for adhesive or expansion anchors but only one anchor side plate is required on individual pieces of sill plate less than thirty-two (32) inches in length. Wood structural panel shims shall be used on sill plates for single plate anchor side plates when the foundation stem wall is from three-sixteenths (3/16) inch to three-fourths (3/4) inch wider than the sill plate. The shim length shall extend a minimum of two (2) inches past each end of the anchor side plate. Two (2) plate anchor side plates shall be used when the total thickness of the required shim exceeds three-fourths (3/4) inch.

   All anchor side plates which use lag or wood screws shall pre-drill the sill plate to prevent splitting as required by Section 2304.9 of the California Building Code adopted in Chapter 18.40.

   Lag or wood screws shall be installed in the center of the thickness of the existing sill plate.

   Expansion anchors shall not be used in unreinforced masonry or concrete masonry grout of poor quality. Adhesive anchors shall be required when expansion anchors will not tighten to the required torque or their installation causes surface cracking of the foundation wall.

2. Placement of anchors. Anchors shall be placed within twelve (12) inches, but not less than nine (9) inches, from the ends of sill plates and shall be placed near the center of the stud

space closest to the required spacing. New sill plates may be installed in pieces when necessary because of existing conditions.

The minimum length of new sill plate pieces shall be thirty (30) inches.

EXCEPTION: Where physical obstructions such as fireplaces, plumbing or heating ducts interfere with the placement of an anchor, the anchor shall be placed as close to the obstruction as possible, but not less than nine (9) inches from the end of the plate. Center-to-center spacing of the anchors shall be reduced as necessary to provide the minimum total number of anchors required based on the full length of the wall. Center-to-center spacing shall not be less than twelve (12) inches.

3. New perimeter foundations. Sill plates for new perimeter foundations shall be anchored as required by Section 1805.6 of the California Building Code adopted in Chapter 18.40.

D. Cripple wall bracing.

1. General. Exterior cripple walls not exceeding four (4) feet in height shall use the prescriptive bracing method listed below. Cripple walls more than four (4) feet in height require analysis by a registered design professional in accordance with Chapter 16 of the California Building Code adopted in Chapter 18.40.

2. Sheathing requirements. Wood structural panel sheathing shall not be less than 15/32 inch thick. When used, plywood panels shall be constructed of five (5) or more plies.

All wood structural panels shall be nailed with 8d common nails spaced four (4) inches on center at all edges and at twelve (12) inches on center at each intermediate support with not less than two (2) nails for each stud. Nails shall be driven so that their head or crown is flush with the surface of the sheathing and shall penetrate the supporting member a minimum of one and one-half (1½) inch. When a nail fractures the surface, it shall be left in place and not counted as part of the required nailing. A new 8d nail shall be located within two (2) inches of the discounted nail and hand-driven flush with the sheathing surface.

EXCEPTION: No. 6 × 1-½ inch wood screws may be used for sheathing nailing when bracing materials are installed on the interior face of studs and cement plaster or other brittle finishes are on the exterior of the sheathed wall.

All horizontal joints must occur over nominal two (2) inch by four (4) inch blocking installed with the nominal four (4) inch dimension against the face of the plywood. All vertical joints must occur over studs. Vertical joints at adjoining pieces of wood structural panels shall be centered on existing studs such that there is a minimum one-eighth (1/8) inch between the panels.

Nails shall be placed a minimum of one-half (1/2) inch from the edges of the existing stud. When such edge distance cannot be maintained because of the width of the existing stud, a new stud shall be added adjacent to the existing and connected with 16d common nails at eight (8) inches on center. A minimum of three (3) such nails shall be provided.

3. Distribution and amount of bracing. See Table 69-A for the distribution and amount of bracing required. Bracing for a building with three (3) or more floor levels above cripple wall studs exceeding fourteen (14) inches in height must be designed in accordance with Chapter 16 of the California Building Code adopted in Chapter 18.40.

The braced panel must be at least two (2) times the height of the cripple stud wall but not less than forty-eight (48) inches in width. All panels along a wall shall be nearly equal in length and shall be nearly equally spaced along the length of the wall. Braced panels at ends of walls shall be located as near the end as possible.

Where physical obstructions such as fireplaces, plumbing or heating ducts interfere with the placement of cripple wall bracing, the bracing shall then be placed as close to the obstruction as possible. The total amount of bracing required shall not be reduced because of obstructions, but the required length of bracing need not exceed the length of the wall.

Under floor ventilation openings shall be maintained in accordance with Section 1203.3 of the California Building Code adopted in Chapter 18.40. Braced panels may include under floor ventilation openings when the height of the solid portion of the panel meets or seventy-five percent (75%) of the height of the cripple stud wall.

When the minimum amount of bracing prescribed in Table 69-A cannot be installed due to obstructions along any wall, the bracing must be designed by a registered design professional in accordance with Subsection 18.69.010.C.

4. Stud space ventilation. When bracing materials are installed on the interior face of studs forming an enclosed space between the new bracing and existing exterior finish, each braced stud space must be ventilated. Adequate ventilation and access for future inspection shall be provided by drilling on two (2) inch to three (3) inch diameter round hole through the sheathing nearly centered between each stud at the top and bottom of the cripple wall. Such holes should be spaced a minimum of one (1) inch clear from the sill or top plates. In stud spaces containing sill bolts, the hole shall be located on the center line of the sill bolt but not closer than one (1) inch clear from the nailing edge of the sheathing.

   When existing blocking occurs within the stud space, additional ventilation holes shall be placed above and below the blocking or the existing block shall be removed and a new nominal two (2) inch by four (4) inch block installed with the nominal four (4) inch dimension against the face of the plywood. For stud heights less than eighteen (18) inches, only one (1) ventilation hole need be provided.

5. Existing under floor ventilation. Existing under floor ventilation shall not be reduced without providing equivalent new ventilation as close to the existing as possible. New sheathing may be installed around existing vent openings in braced panels when the length of the panel is increased a distance equal to the length of the vent opening or one stud space minimum.

   EXCEPTION: For residential buildings with a post and pier foundation system where a new continuous perimeter foundation system is being installed, ventilation shall be provided in accordance with this title.

18.69.050 – Quality control.

A. Inspection by the Department. All work shall be subject to inspection by the Building Official including, but not limited to:

   1. Placement and installation of new adhesive or expansion anchors or anchor side plates installed in existing foundations;

   2. Placement of required blocking and framing anchors;

   3. Installation and nailing of new cripple wall bracing. The torque testing of sill plate anchors per Subsection 18.69.040.C.1 shall be performed by the Building Inspector.

B. Special inspection. Special inspection is not required for sill plate anchors installed in existing foundations regulated by the provisions of this chapter. Any work may be subject to special inspection when required by the Building Official or when so designated by the registered design professional of record.

C. Structural observation. Structural observation is not required for work done under the prescriptive provisions of this chapter. When construction documents for strengthening are prepared by a registered design professional and alternate materials or methods are used, structural observation shall be provided as required in Section 1710 of the California Building Code adopted in Chapter 18.40.

D. Registered design professional of record's statement. When an alternative design is provided per Subsection 18.69.010.C, the responsible registered design professional of record shall place the following statement on the approved construction document:

1. "I am responsible for this building's seismic strengthening design for the under floor cripple walls and sill bolting in compliance with the minimum seismic resistance standards of Chapter 18.69 of the Long Beach Municipal Code."

   or when applicable:

2. "The registered special inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by Section 1704.1 of the California Building Code adopted in Chapter 18.40 of the Long Beach Municipal Code."

TABLE 69-A SILL PLATE ANCHORAGE AND CRIPPLE WALL BRACING[1,2,3]

Number of Stories Above Cripple Walls	Minimum Sill Plate Connection and Maximum Spacing	Amount of Wall Bracing
One Story	Adhesive or expansion anchors shall be ½ inch minimum diameter spaced at 6 feet maximum center to center.	Each end and not less than 50% of the wall length.
Two Story	Adhesive or expansion anchors shall be ½ inch minimum diameter spaced at 4 feet maximum center to center; or ⅝ inch spaced at 6 feet maximum center to center.	Each end and not less than 70% of the wall length.
Three Story	Adhesive or expansion anchors shall be ½ inch minimum diameter spaced at 2 feet 8 inches maximum center to center; or ⅝ inch minimum diameter spaced at 4 feet maximum center to center.	100% of the wall length.

[1] Plate washers for use with adhesive or expansion anchors shall be two inches by two inches by three-sixteenths inch for one-half-inch diameter anchors and two and one-half inches by two and one-half inches by one-fourth inch for five-eighths-inch diameter anchors.
[2] Existing sill plate anchor bolts shall be permitted to provide all or a portion of the sill plate connection requirement if:
[2.1] The anchor bolt is cast in concrete and in sound condition,
[2.2] The diameter size and maximum spacing meets or exceeds the requirements of this table,
[2.3] A new plate washer conforming to Footnote 1 is installed, and
[2.4] The sill plate is connected to a snug-tight condition and torque tested per Subsection 18.69.040.C.1.
[3] Anchor side plates shall be permitted when conditions prevent anchor installation vertically through the sill plate.

CHAPTER 18.70 VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING WOOD FRAME RESIDENTIAL BUILDINGS WITH SOFT, WEAK OR OPEN FRONT WALLS

CHAPTER 18.70
VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING WOOD FRAME RESIDENTIAL BUILDINGS WITH SOFT, WEAK OR OPEN FRONT WALLS

18.70.010 – Purpose.

The purpose of this chapter is to promote the public welfare and safety by reducing the risk of death or injury that may result from the effects of earthquakes on existing wood-frame multi-unit residential buildings. The ground motion of the Northridge earthquake caused the loss of human life, personal injury and property damage in these types of buildings. This chapter creates minimum standards to strengthen the more vulnerable portions of these structures. When fully followed, these minimum standards will substantially improve the performance of these buildings but will not necessarily prevent all earthquake-related damage.

18.70.020 –Scope.

The provisions of this chapter shall apply to all existing wood frame buildings or portions thereof, designed using the Building Code in effect before January 1, 1995, which are used as hotels, lodging houses, congregate residences or apartment houses where:

A. The ground floor portion of the wood frame structure contains parking or other similar open floor space that causes soft, weak or open front wall lines as defined in this chapter and there exists one or more levels above; or

B. The walls of any story or basement of wood construction are laterally braced with nonconforming structural materials as defined in this chapter and there exists two or more levels above.

18.70.030 – Definitions.

Notwithstanding the applicable definitions, symbols and notations in this title, the following definitions shall apply for the purposes of this chapter.

"Apartment house" means any building or portion thereof which contains three (3) or more dwelling units, and for the purposes of this chapter, includes residential condominiums.

"Aspect ratio" means the ratio of the height of a wall section to its width.

"Congregate residence" means any building or portion thereof which contains facilities for living, sleeping and sanitation, as required by this code, and may include facilities for eating and cooking, for occupancy by other than a family. A congregate residence may be a shelter, convent, monastery, dormitory, and fraternity or sorority house but does not include jails, hospitals, nursing homes, hotels or lodging houses.

"Cripplewall" means a wood-framed stud wall extending from the top of the foundation wall to the underside of the lowest floor framing.

"Dwelling unit" means any building or portion thereof which contains living facilities, including provisions for sleeping, eating, cooking and sanitation, as required by this code, for not more than one (1) family, or congregate residence for ten (10) or fewer persons.

"Expansion anchor" means an approved mechanical fastener placed in hardened concrete, designed to expand in a self-drilled or pre-drilled hole of a specified size and engage the sides of the hole in one (1) or more locations to develop shear and/or tension resistance to applied loads without grout, adhesive or drypack.

"Groundfloor" means any floor within the wood frame portion of a building whose elevation is immediately accessible from an adjacent grade by vehicles or pedestrians. The ground floor portion of the structure does not include any level that is completely below adjacent grades.

"Guest room" means any room or rooms used or intended to be used by a guest for sleeping purposes. Every one hundred (100) square feet of superficial floor area in a congregate residence shall be considered a guest room.

"Hotel" means any building containing six (6) or more guest rooms intended or designed to be used, rented, hired out to be occupied, or which are occupied for sleeping purposes by guests.

"Level" means a story, basement or under floor space of a building with cripple walls exceeding four (4) feet in height.

"Lodginghouse" means any building or portion thereof containing at least one (1) but not more than five (5) guest rooms where rent is paid in money, goods, labor or otherwise.

"Motel" means a hotel as defined in this chapter.

"Multi-unit residential buildings" means hotels, lodging houses, congregate residences and apartment houses.

"Nonconforming structural materials" means wall bracing materials for seismic loads whose allowable shear value was reduced or whose maximum allowable aspect ratio was decreased since the original building construction. These methods or materials include, but are not limited to cement or gypsum plaster, gypsum wall board, diagonal or let-in bracing, straight or diagonal wood sheathing, particle board and structural wood panels.

"Open frontwall line" means an exterior wall line without vertical elements of the lateral-force-resisting system which requires tributary seismic forces to be resisted by diaphragm rotation or excessive cantilever beyond parallel lines of shear walls. Diaphragms that cantilever more than twenty-five percent (25%) of the distance between lines of lateral-force-resisting elements shall be considered excessive. Exterior exit balconies of six (6) feet or less in width shall not be considered excessive cantilevers.

"Retrofit" means an improvement of the lateral-force-resisting system by alteration of existing structural elements or addition of new structural elements.

"Softwall line" means a wall line whose lateral stiffness is less than required by story drift limitations or deformation compatibility requirements of this chapter. In lieu of analysis, this may be defined as a wall line in a story where the story stiffness is less than seventy percent (70%) of the story above for the direction under consideration.

"Story strength" means the total strength of all seismic-resisting elements sharing the same story shear in the direction under consideration.

"Wallline" means any length of a wall along a principal axis of the building used to provide resistance to lateral loads. Parallel wall lines separated by less than four (4) feet shall be considered one wall line for the distribution of loads.

"Weakwall line" means a wall line laterally braced with nonconforming structural materials or a wall line in a story where the story strength is less than eighty percent (80%) of the story above in the direction under consideration.

18.70.040 – General requirements for phased construction.

When the building contains three (3) or more levels, the work specified in this chapter shall be permitted to be done in the following phases. Work shall start with Phase 1 unless otherwise approved by the Building Official. When the building does not contain the conditions shown in any phase, the sequence of retrofit work shall proceed to the next phase in numerical order.

A. Phase 1 Work. The first phase of the retrofit work shall include the ground floor portion of the wood structure that contains parking or other similar open floor space.

B. Phase 2 Work. The second phase of the retrofit work shall include the walls of any level of wood construction with two (2) or more levels above, which are laterally braced with nonconforming structural materials.

C. Phase 3 Work. The third and final phase of the retrofit work shall include the remaining portions of the building up to, but not including, the top story as specified in Subsection 18.70.050.B.

18.70.050 – Analysis and design.

A. General. Every building within the scope of this chapter shall be analyzed, designed and constructed in conformance with this code except as modified herein. No alteration of the existing lateral-force-resisting or vertical load-carrying system shall reduce the strength or stiffness of the existing structure.

B. Scope. This chapter requires the alteration, repair, replacement or addition of structural elements and their connections to meet the strength and stiffness requirements herein. The lateral load path analysis shall include the resisting elements and connections from the wood diaphragm above any soft, weak or open front wall lines to the foundation soil interface or reinforced concrete slab or masonry wall supporting elements below. The top story of any building need not be analyzed. The lateral load path analysis for added structural elements shall also include evaluation of the allowable soil bearing and lateral pressures in accordance with Section 1803 of the California Building Code adopted in Chapter 18.40.

EXCEPTION: When an open front, weak or soft wall line exists due to parking at the ground level of a two-level building and the parking area is less than twenty percent (20%) of the ground floor level, then only the wall lines in the open, weak or soft directions of the enclosed parking area, need comply with the provisions of this chapter.

C. Design base shear. The design base shear shall be seventy-five percent (75%) of that currently required by ASCE 7-05 Section 12.8.1.

D. Vertical distribution of forces. The total seismic force shall be distributed over the height of the structure based on Formula (12.8-11 and 12.8-12) in ASCE 7-05 Section 12.8.3. Distribution of force by story weight shall be permitted for two-story buildings. The value of R used in the design of any story shall be less than or equal to the value of R used in the given direction for the story above.

E. Weak story limitation. The structure shall not exceed thirty (30) feet in height or two (2) levels if the lower level strength is less than sixty-five percent (65%) of the story above. Existing walls shall be strengthened as required to comply with this provision unless the weak level can resist a total lateral seismic force of Ω_o per Subsection 18.70.050.C times the design force prescribed in Subsection 18.70.050.D. The story strength for each level of all other structures shall be a minimum of eighty percent (80%) of the story above.

F. Story drift limitation. The calculated story drift for each retrofitted level shall not exceed the allowable deformation compatible with all vertical load-resisting elements and 0.005 or 0.04/R times the story height. The calculated story drift shall not be reduced by the effects of horizontal diaphragm stiffness but shall be increased when these effects produce rotation. The effects of rotation and soil stiffness shall be included in the calculated story drift when lateral loads are

resisted by vertical elements whose required depth of embedment is determined by pole formulas such as Equation (18-1), (18-2) and (18-3) in Section 1807.3.2 of the California Building Code adopted in Chapter 18.40. The coefficient of variation of subgrade reaction used in the deflection calculations shall be provided from an approved geotechnical engineering report or other approved methods.

G. PΔ effects. The requirements of ASCE 7-05 Section 12.8.7 shall apply except as modified herein. All framing elements not required by the design to be part of the lateral-force-resisting system shall be investigated and shown to be adequate for vertical load-carrying capacity when displaced Ω_o per Subsection 18.70.050.C times the displacements resulting from the required lateral force. The stress analysis of cantilever columns shall use a buckling factor of 2.1 for the direction normal to the axis of the beam.

H. Ties and continuity. All parts of the structure included in the scope of Subsection 18.70.050.B shall be interconnected and the connection shall be capable of resisting the seismic force created by the parts being connected. Any smaller portion of a building shall be tied to the remainder of the building with elements having a strength of 0.1833 times the tributary dead load of the smaller portion.

A positive connection for resisting a horizontal force acting parallel to the member shall be provided for each beam, girder or truss included in the lateral load path. This force shall not be less than 0.08 times the combined tributary dead and live loads or as required by the lateral load path transfer, whichever is greater.

I. Collector elements. Collector elements shall be provided which can transfer the seismic forces originating in other portions of the building to the elements within the scope of Subsection 18.70.050.B that provide resistance to those forces.

J. Horizontal diaphragms. The analysis of shear demand or capacity of an existing plywood or diagonally sheathed horizontal diaphragm need not be investigated unless the diaphragm is required to transfer lateral forces from the lateral-resisting elements above the diaphragm to other lateral-force-resisting elements below the diaphragm due to offset in placement of the elements. Wood diaphragms in structures that support floors or roofs above shall not be allowed to transmit lateral forces by rotation or cantilever. However, rotational effects shall be accounted for when unsymmetric wall stiffness increases shear demands.

EXCEPTION: Diaphragms that cantilever twenty-five percent (25%) or less of the distance between lines of lateral-force-resisting elements from which the diaphragm cantilevers may transmit their shears by cantilever provided that rotational effects on shear walls parallel and perpendicular to the load are accounted for.

K. Shear walls. Shear walls shall have sufficient strength and stiffness to resist the tributary seismic loads and shall conform to the special requirements of this subection.

1. Gypsum or plaster products. Gypsum or plaster products shall not be used to provide lateral resistance.

2. Wood structural panels.

a. Drift limit. Wood structural panel shear walls shall meet the story drift limitation of Subsection 18.70.050.F. Conformance to the story drift limitation shall be determined by approved testing or calculation or analogies drawn therefrom and not the use of an aspect ratio. Calculated deflection shall be in accordance with Section 2305.3.2 of the California Building Code adopted in Chapter 18.40 and twenty-five percent (25%) shall be added to account for inelastic action and repetitive loading. Contribution to the deflection from the anchor or tie down slippage shall also be included. The slippage contribution shall include the vertical elongation of the metal, the vertical slippage of the connectors

and compression or shrinkage of the wood elements. The vertical slippage shall be multiplied by the aspect ratio and added to the total horizontal deflection. Individual shear panels shall be permitted to exceed the maximum aspect ratio provided the story drift and allowable shear capacities are not exceeded.

b. Openings. Openings are permitted in shear walls if they do not exceed fifty percent (50%) of the height or width of the shear wall. The remaining portion of the shear wall shall be strengthened for the transfer and increase of all shearing forces caused by the opening. The resulting shear wall shall be analyzed as a mosaic of shear-resisting elements. Blocking and steel strapping shall be employed at the corners of the opening to transfer forces from discontinuous boundary elements into adjoining panel elements.

The effects of openings on the stiffness of the shear wall shall be demonstrated to comply with the requirements of Subsection 18.70.050.F. The stiffness shall be calculated using the properties of the different shear elements making up the shear wall or it shall be demonstrated by approved testing. When shear walls cannot be made to conform to the requirements of this section because of existing openings, the openings shall be relocated or reduced in width to meet the strength and stiffness requirements of the lateral loads. Relocated and altered openings shall comply with the emergency escape requirements in Chapter 10 of the California Building Code adopted in Chapter 18.40. Relocated and altered openings shall comply with the light and ventilation requirements in Chapter 12 of the California Building Code adopted in Chapter 18.40 or Chapter 3 of the California Residential Code adopted in Chapter 18.41 unless otherwise approved by the Building Official.

c. Wood species of framing members. Allowable shear values for wood structural panels shall consider the species of the framing members. When the allowable shear values are based on Douglas Fir-larch framing members and framing members are constructed of other species of lumber, the allowable shear values shall be multiplied by the appropriate factors determined in accordance with Chapter 23 of the California Building Code adopted in Chapter 18.40.

3. Mechanical penetrations. Mechanical penetrations in shear walls that exceed the provisions of Chapter 23 of the California Building Code adopted in Chapter 18.40 or the California Building Code adopted in Chapter 18.40 or the California Residential Code adopted in Chapter 18.41 shall be accounted for in the design or the shear wall shall be analyzed as two separate walls on each side of the penetration.

4. Substitution for three-inch nominal width framing members. Two (2) two-inch nominal width framing members shall be permitted in lieu of any required three-inch nominal width framing member when the existing and new framing member are of equal dimensions, are connected as required to transfer the in-plane shear between them and the sheathing fasteners are equally divided between them.

5. Hold-down connectors.

a. Expansion anchors in tension. Expansion anchors that provide tension strength by friction resistance shall not be used to connect hold down devices to existing concrete or masonry elements. Expansion anchors shall be permitted to provide tension strength by bearing.

b. Required depth of embedment. The required depth of embedment or edge distance for the anchor used in the hold down connector shall be provided in the concrete or masonry below any plain concrete slab unless satisfactory evidence is submitted to the Building Official that shows that the concrete slab and footings are of monolithic construction.

c. Required preload of bolted hold-down connectors. Bolted hold down connectors shall be preloaded to reduce slippage of the connector. Preloading shall consist of tightening the nut on the tension anchor after the placement but before the tightening of the shear bolts in the panel flange member. The tension anchor shall be tightened until the shear bolts are in firm contact with the edge of the hole nearest the direction of the tension anchor. Hold down connectors with self-jigging bolt standoffs shall be installed in a manner to permit preloading.

18.70.060 – Materials of construction.

A. New materials. All materials approved by this title, including their appropriate allowable stresses and minimum aspect ratios, shall be permitted to meet the requirements of this chapter.

B. Allowable foundation and lateral pressures. Allowable foundation and lateral pressures shall be permitted to use the values from Table 1806.2 of the California Building Code adopted in Chapter 18.40. The coefficient of variation of subgrade reaction shall be established by an approved geotechnical engineering report or other approved methods when used in the deflection calculations of embedded vertical elements as required in Subsection 18.70.050.F.

C. Existing materials. All existing materials shall be in sound condition and constructed in conformance to this code before they can be used to resist the lateral loads prescribed in this chapter. The verification of existing material conditions and their conformance to these requirements shall be made by physical observation reports, material testing or record drawings as determined by the responsible registered design professional of record and approved by the Building Official.

1. Horizontal wood diaphragms. Existing horizontal wood diaphragms that require analysis under Subsection 18.70.050.J shall be permitted to use Table A-23-C of Chapter 18.68 this title for their allowable values.

2. Wood structural panel shear walls.

a. Allowable nail slip values. When the required drift calculations of Subsection 18.70.050.K.2.a rely on the lower slip values for common nails or surfaced dry lumber, their use in construction shall be verified by exposure. The use of box nails and unseasoned lumber may be assumed without exposure. The verification of surfaced dry lumber shall be by identification conforming to Chapter 23 of the California Building Code adopted in Chapter 18.40.

b. Reduction for clipped nail heads. When exposed nails do not meet the nominal head sizes required for hand-driven nails in Chapter 23 of the California Building Code adopted in Chapter 18.40, the allowable shear capacity for wood structural panel shear walls shall be proportionately reduced. The reduction shall be a percentage of the reduction in the nail head area below the required nail head area including tolerances.

c. Plywood panel construction. When verification of the existing plywood materials is by use of record drawings alone, the panel construction for plywood shall be assumed to be of three plies.

d. Framing members of other species. When verification of the existing wood material is by use of record drawings, the allowable shear capacity shall be multiplied by the reduction factor of 0.82 for buildings built on or after 1960. Buildings built before this period shall use the reduction factor 0.65. When verification of the existing wood material is by identification in conformance to Chapter 23 of the California Building Code adopted in Chapter 18.40, the allowable shear capacity shall be determined in accordance with Subsection 18.70.050.K.2.c.

3. Lumber. When the existing dimensioned lumber is not identified in conformance to Chapter 23 of the California Building Code adopted in Chapter 18.40, the allowable stresses shall be permitted for the structural elements specified below.

Posts and Beams	Douglas Fir-larch No. 1
Joists and Rafters	Douglas Fir-larch No. 2
Studs, Blocking	Hem Fir Stud

4. Structural steel. All existing structural steel shall be permitted to use the allowable stresses for Grade A36. Existing pipe or tube columns shall be assumed to be of minimum wall thickness unless verified by testing or exposure.

5. Strength of concrete. All existing concrete footings shall be permitted to use the allowable stresses for plain concrete with a compressive strength of two thousand (2,000) psi. The strength of existing concrete with a record compressive strength greater than two thousand (2,000) psi shall be verified by testing, record drawings or Department records.

6. Existing sill plate anchorage. Existing cast-in-place anchor bolts shall be permitted to use the allowable service loads for bolts with proper embedment when used for shear resistance to lateral loads.

18.70.070 – Required information on construction documents.

A. General. The construction documents shall show all necessary dimensions and materials for plan review and construction and shall accurately reflect the results of the engineering investigation and design.

B. Existing construction. The construction documents shall show the existing diaphragm and shear wall sheathing and framing materials, fastener type and spacing, diaphragm and shear wall connections, continuity ties, and collector elements. The plans shall also show the portion of the existing materials that needs verification during construction.

C. New construction.

1. Foundation plan elements. The foundation plan shall include the size, type, location and spacing of all anchor bolts with the required depth of embedment, edge and end distance; the location and size of all columns for braced or moment frames; referenced details for the connection of braced or moment frames to their footing; and referenced sections for any grade beams and footings.

2. Framing plan elements. The framing plan shall include the width, location and material of shear walls; the width, location and material of frames; references on details for the column-to-beam connectors, beam-to-wall connections, and shear transfers at floor and roof diaphragms; and the required nailing and length for wall top plate splices.

3. Shear wall schedule, notes and details. Shear walls shall have a referenced schedule on the construction documents that includes the correct shear wall capacity in pounds per foot; the required fastener type, length, gauge and head size; and a complete specification for the sheathing material and its thickness. The schedule shall also show the required location of three-inch nominal or two (2) two-inch nominal edge members; the spacing of shear transfer elements, such as framing anchors or added sill plate nails; the required hold down with its

bolt, screw or nail sizes; and the dimensions, lumber grade and species of the attached framing member.

Notes shall show required edge distance for fasteners on structural wood panels and framing members; required flush nailing at the plywood surface; limits of mechanical penetrations; and the sill plate material assumed in the design. The limits of mechanical penetrations shall also be detailed showing the maximum notching and drilled hole sizes.

4. General notes. General notes shall show the requirements for material testing, special inspection, structural observation and the proper installation of newly added materials.

5. Registered design professional of record's statement. The responsible registered design professional of record shall provide the following statements on the approved construction documents:

   a. "I am responsible for designing this building's seismic strengthening in compliance with the minimum seismic resistance standards of Chapter 18.70 of the Long Beach Municipal Code."

      and when applicable:

   b. "The Registered Special Inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by Section 1704.1 of the California Building Code adopted in Chapter 18.40 of the Long Beach Municipal Code."

CHAPTER 18.71 VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING REINFORCED CONCRETE BUILDINGS AND CONCRETE FRAME BUILDINGS WITH MASONRY INFILLS

CHAPTER 18.71
VOLUNTARY EARTHQUAKE HAZARD REDUCTION IN EXISTING REINFORCED CONCRETE BUILDINGS AND CONCRETE FRAME BUILDINGS WITH MASONRY INFILLS

18.71.010 – Purpose.

The purpose of this chapter is to promote public safety and welfare by reducing the risk of death or injury that may result from the effects of earthquakes on concrete buildings and concrete frame buildings with masonry infills. The Northridge Earthquake caused widespread damage to these buildings, including some collapses.

The recent Great Hanshin earthquake in Kobe, Japan, also caused several hundred of these buildings to collapse. These nonductile concrete buildings are frequently used in Long Beach for department stores, office buildings, hotels, parking structures and some mid-rise condominiums. Their performance in an earthquake is essential to the life and safety of their occupants and the overall stability of the local economy. This chapter provides voluntary retrofit standards that, when fully followed, will substantially improve the seismic performance of these buildings but will not necessarily prevent all earthquake damage.

18.71.020 – Scope.

The provisions of this chapter may be applied to all buildings designed under Building Codes in effect prior to January 13, 1976, or built with building permits issued prior to January 13, 1977, having concrete floors and/or concrete roofs supported by reinforced concrete walls or concrete frames and columns, and/or concrete frames with masonry infills.

18.71.030 – Definitions.

For purposes of this chapter, the applicable definitions and notations in Sections 1602, 1613.2 and 1902 of the California Building Code adopted in Chapter 18.40 and the following definition shall apply:

"Masonry infill" means the unreinforced or reinforced masonry wall construction within a reinforced concrete frame.

18.71.040 – General requirements.

When the owner of each building within the scope of this chapter causes an investigation of the existing construction, a structural analysis shall be made of the building by a registered design profession licensed by the State of California.

EXCEPTION: Regular concrete shear wall buildings, of four (4) stories in height and under, may be shown to be in conformance with this chapter by filing a report signed by a registered design profession licensed by the State of California containing the information specified in Section 18.71.090.

18.71.050 – Criteria selection.

A. Basis for analysis. The building shall be analyzed to determine the displacements caused by inertial force effects determined in accordance with the dynamic lateral analysis procedure of Section 18.71.060. The building structural system shall provide a complete load path for resisting the effects of seismic loading. The capacity of all parts of the structural system shall exceed the demand calculated by the dynamic analysis using the effective stiffnesses determined by a nonlinear analysis of the elements.

EXCEPTION: Buildings conforming to the requirements of Subsections 18.71.050.D.2 and 18.71.050.D.3 may be analyzed using the procedure specified in Sections 18.71.070 and 18.71.080, respectively.

B. Site geology and soil characteristics. In the absence of a soils investigation, the soil site class shall be taken as Type D.

C. Configuration requirements.

1. General. Each structure shall be designated as structurally regular or irregular.

2. Regular structures. Regular structures have no significant physical discontinuities in plan or vertical configuration or in their lateral-force-resisting systems such as the irregular features described below.

a. Irregular structures have significant physical discontinuities in configuration or in their lateral-force-resisting systems. Irregular features include, but are not limited to, those described in Tables 12.3-1 and ASCE 7-05 Section 12.3-2.

b. Structures having one or more of the features listed in Table 12.3-2 of ASCE 7-05 shall be designated as having a vertical irregularity.

EXCEPTION: Where none of the story drift ratios under equivalent lateral forces is greater than 1.3 times the story drift ratio of the story above, the structure may be deemed to not have the structural irregularities of Type 1 or 2 listed in Table 12.3-2 of ASCE 7-05. The story drift for this determination shall be calculated including torsional effects.

c. Structures having one (1) or more of the features listed in Table 12.3-1 of ASCE 7-05 shall be designated as having a plan irregularity.

d. Irregular structures conforming to the requirements of Subsection 18.71.050.D and Section 18.71.080 may be considered regular if the plan and vertical irregularities are removed by the addition of lateral load-resisting systems.

D. Selection of lateral analysis procedure.

1. General. Any structure may be analyzed using the dynamic lateral analysis procedures of Section 18.71.060. The equivalent lateral force procedure or the simplified analysis may be used for structures conforming to the requirements on the use of those analyses.

2. Equivalent lateral force. The equivalent lateral force procedure of Section 18.71.070 may be used for regular structures or irregular structures having plan irregularity only of not more than four (4) stories.

3. Simplified analysis. Regular structures of not more than four (4) stories conforming to the requirements of Section 18.71.080 may be analyzed for a prescribed strength of their systems and elements.

E. Alternative procedures.

1. General. Alternative lateral analysis procedures using rational analyses based on well-established principles of mechanics may be used in lieu of those prescribed in this chapter when approved by the Building Official.

2. Seismic isolation. Seismic isolation (Chapter 17 of ASCE 7-05, Seismic Design Requirements for Seismically Isolated Structures), energy dissipation and damping systems may be used to

reduce story drift when approved by the Building Official. The isolated structure shall comply with the drift requirements of Section 18.71.060.

18.71.060 – Dynamic lateral analysis procedure.

A. General. Structures shall be analyzed for seismic forces acting concurrently on the orthogonal axes of the structure. The effects of the loading on two orthogonal axes shall be combined by the square root of the sum of the squares (SRSS) methods.

B. Ground motion. The seismic ground motion values shall be determined in accordance with ASCE 7-05 and may be one of the following:

1. The elastic design response spectrum shall be seventy-five percent (75%) of the response spectrum described in ASCE 7-05 Section 11.4.5.

2. A site-specific response spectrum shall be seventy-five percent (75%) of the site-specific response spectrum described in ASCE 7-05 Section 11.4.7.

C. Mathematical model. The three-dimensional mathematical model of the physical structure shall represent the spatial distribution of mass and stiffness of the structure to an extent which is adequate for the calculation of the significant features of its dynamic response. All concrete and masonry elements shall be included in the model of the physical structure.

EXCEPTION: Concrete or masonry partitions that are adequately isolated from the concrete frame members and the floor above.

Cast-in-place reinforced concrete floors with span-to-depth ratios less than three (3) to one (1) may be assumed to be rigid diaphragms. Other floors, including floors constructed of precast elements with or without a reinforced concrete topping, shall be analyzed in conformance with ASCE 7-05 Section 12.3.1.3 to determine if they must be considered as flexible diaphragms. The effective in-plane stiffness of the diaphragm, including effects of cracking and discontinuity between precast elements, shall be considered. Ramps that interconnect floor levels shall be modeled as having mass appropriately distributed on that element. The lateral stiffness of the ramp may be calculated as having properties based on the uncracked cross section of the slab exclusive of beams and girders.

D. Effective stiffness.

1. General. The effective stiffness of concrete and masonry elements or systems shall be calculated as the secant stiffness of the element or system with due consideration of the effects of tensile cracking and compression strain. The secant stiffness shall be taken from the force-displacement relationship of the element or system. The secant stiffness shall be measured as the slope from the origin to the intersection of the force-displacement relationship at the assumed displacement. The force-displacement relationship shall be determined by a nonlinear analysis. The force-displacement analysis shall include the calculation of the displacement at which strength degradation begins.

EXCEPTION: The initial effective moment of inertia of beams and columns in shear wall or infilled frame buildings may be estimated using Table 71-B. The ratio of effective moment of inertia used for the beams and for the columns shall be verified by Formulas (71-1), (71-2) and (71-3). The estimates shall be revised if the ratio used exceeds the ratio calculated by more than twenty percent (20%).

$$I_e = \left(\frac{M_{cr}}{M_a}\right)^3 I_g + \left[1 - \left(\frac{M_{cr}}{M_a}\right)^3\right] I_{cr} \Big| \quad (71\text{-}1)$$

WHERE:

$$M_{cr} = \frac{f_r \, I_g}{y_t} \quad (71\text{-}2)$$

and

$$f_r = 7.5 \sqrt{f'_c} \quad (71\text{-}3)$$

2. Infills. The effective stiffness of an infill shall be determined from a nonlinear analysis of the infill and the confining frame. The effect of the infill on the stiffness of the system shall be determined by differencing the force-displacement relationship of the frame-infill system from the frame-only system.

3. Model of infill. The mathematical model of an infilled frame structure shall include the stiffness effects of the infill as a pair of diagonals in the bays of the frame. The diagonals shall be considered as having concrete properties and only axial loads.

   Their lines of action shall intersect the beam-column joints. The secant stiffness of the force-displacement relationship, calculated as prescribed in Subsection 18.71.060.D.2, shall be used to determine the effective area of the diagonals. The effective stiffness of the frame shall be determined as specified in Subsection 18.71.060.D.1. Other procedures that provide the same effective stiffness for the combination of infill and frame may be used when approved by the Building Official.

4. Effective stiffness of elements and systems. The effective stiffness shall be determined by an iterative method. The mathematical model using assumed effective stiffness shall be used to calculate dynamic displacements. The effective stiffness of all concrete and masonry elements shall be modified to represent the secant stiffness obtained from the nonlinear force displacement analysis of the element or system at the calculated displacement. A reanalysis of the mathematical model shall be made using the adjusted effective stiffness of existing and supplemental elements and systems until closure of the iterative process is obtained. A difference of ten percent (10%) from the effective stiffness used and that recalculated may be assumed to be closure of the iterative process.

E. Description of analysis procedures.

1. Response spectrum analysis. Response spectrum analysis is an elastic dynamic analysis of a structure utilizing the peak dynamic response of all modes having a significant contribution to total structural response. Peak modal responses are calculated using the ordinates of the appropriate response spectrum curve that correspond to the modal periods. Maximum modal contributions are combined in a statistical manner to obtain an approximate total structural response.

2. Number of modes. The requirement of Subsection 18.71.060.E.1 may be satisfied by demonstrating that for the modes considered, at least ninety percent (90%) of the participating mass of the structure is included in the calculation of response for each principal horizontal direction.

3. Combining modes. The peak displacements for each mode shall be combined by recognized methods. Modal interaction effects of three-dimensional models shall be considered when combining modal maxima.

4. Torsion. The three-dimensional analysis shall be considered as including all torsional effects including accidental torsional effects.

F. Material characteristics. The stress-strain relationship of concrete, masonry and reinforcement shall be determined by testing or from published data. The procedure for testing and determination of stress-strain values shall be as prescribed in one of the following:

1. Concrete. The compressive strength of existing concrete shall be determined by tests on cores sampled from the structure or may be taken from information given on the construction documents and confirmed by limited testing. A default value of horizontal shear stress may be used in Subsection 18.71.080.E.1 without testing of the compressive strength of the existing concrete.

   a. The cutting of cores shall not significantly reduce the strength of the existing structure. Cores shall not be taken in columns. Existing reinforcement shall not be cut.

   b. If the construction documents do not specify a minimum compressive strength of the classes of concrete, five (5) cores per story, with a minimum of ten (10) cores, shall be obtained for testing. Exception: If the coefficient of variation of the compressive strength does not exceed fifteen percent (15%), the number of cores per story may be reduced to two (2) and the minimum number of tests reduced to five (5).

   c. When the construction documents specify a minimum compressive strength, two (2) cores per story, per class of concrete, shall be taken in the areas where that concrete was to be placed. A minimum of five (5) cores shall be obtained for testing. If a higher strength of concrete was specified for columns than the remainder of the concrete, cores taken in the beams for verification of the specified strength of the beams shall be substituted for tests in the columns. The strength specified for columns may be used in the analyses if the specified compressive strength in the beams is verified.

   d. The sampling for the concrete strength tests shall be distributed uniformly in each story. If the building has shear walls, a minimum of fifty percent (50%) of the cores shall be taken from the shear walls. Not more than twenty-five percent (25%) of the required cores shall be taken in floor and roof slabs. The remainder of cores may be taken from the center of beams at mid-span. In concrete frame buildings, seventy-five percent (75%) of the cores shall be taken from the beams.

   e. The mean value of the compressive stresses obtained from the core testing for each class of concrete shall be used in the analyses. Values of peak strain that is associated with peak compressive stress may be taken from published data for the nonlinear analyses of reinforced concrete elements.

2. Solid grouted reinforced masonry. The compressive strength of solid grouted concrete block or brick masonry may be taken as two thousand (2,000) psi. The strain associated with peak stress may be taken as 0.0025.

3. Partially grouted masonry. A minimum of five (5) units shall be removed from the walls and tested in conformance with ASTM C90-03 Specification for Load Bearing Concrete Masonry Units. Compressive strength of the masonry may be determined in accordance with Chapter 21 of the California Building Code adopted in Chapter 18.40, assuming Type S mortar. The strain associated with peak stress may be taken as 0.0025.

4. Unreinforced masonry.

   a. The stress-strain relationship of existing unreinforced masonry shall be determined by in-place cyclic testing. The test procedure shall conform to Section 18.71.100.

b. One (1) stress-strain test per story and a minimum of five (5) tests shall be made in the unreinforced masonry infills. The location of the tests shall be uniformly distributed throughout the building.

c. The average values of the stress-strain values obtained from testing shall be used in the nonlinear analyses of frame-infill assemblies or in the calculation of the effective diagonal brace that is used in the simplified analysis procedure of Section 18.71.080.

5. Reinforcement. The yield stress of each type of new or existing reinforcement shall be taken from Table 71-C unless the reinforcement is sampled and tested for yield stress. The axial reinforcement in columns of post-1933 buildings shall be assumed to be hard grade unless noted otherwise on the construction documents.

6. Combination of concrete and masonry materials. Combinations of masonry and concrete infills shall be assumed to have equal strain. The secant moduli at peak stress of the masonry and concrete shall be used to determine the effective transformed area of the composite material.

G. Story drift limitation.

1. Definition. Story drift is the displacement of one level relative to the level above or below calculated by the response spectrum analysis using the appropriate effective stiffness.

2. Limitation. The story drift is limited to that displacement that causes any of the following effects:

a. Compressive strain of 0.003 in the frame confining infill or in a shear wall.

b. Compressive strain of 0.004 in a reinforced concrete column unless the engineer can show by published experimental research that the existing confinement reinforcement justifies higher values of strain.

c. Peak strain in masonry infills as determined by experimental data or by physical testing as prescribed in Section 18.71.100.

d. Displacement that was calculated by the nonlinear analysis as when strength degradation of any element began.

EXCEPTION: This subsection may be taken as the displacement that causes a strength degradation in that line of resistance equal to ten percent (10%) of the sum of the strength of the elements in that line of resistance.

e. A story drift of 0.015 using the dynamic analysis procedure or the forces specified in Section 18.71.070. This limitation shall not supersede the limitations of Subsections 18.71.060.G.2.a through 18.71.060.G.2.d.

H. Compressive strain determination.

1. General. The compressive strain in columns, shear walls and infills may be determined by the nonlinear analysis or a procedure that assumes plane sections remain plane.

2. Axial and flexural loading. The compressive strain shall be determined for combined flexure and axial loading. The flexural moments shall be taken from the response spectrum model for frame or shear wall buildings, and from the substructure model for infill frames. The axial loads shall have the following combination of effects, where L is unreduced live load:

U = 1.0D + 0.3L + 1.0E(71-4)

U = 0.9D - 1.0E(71-5)

I. Shear strength limitation. The required in-plane shear strength of all columns, piers and shear walls shall be the shear associated with the moments induced at the ends of columns or piers and at the base of shear walls by the story displacements. No strength reduction factors shall be used in the determination of strength.

18.71.070 – Equivalent lateral force procedure.

A. General. Structures shall be analyzed for prescribed forces acting concurrently on the orthogonal axes of the building. The effects of the loading on the two (2) orthogonal axes shall be combined as required by Subsection 18.71.060.A.

B. Base Shear for Analysis. The base shear used to determine story drifts shall be determined using seventy-five percent (75%) of the base shear as determined in accordance with ASCE 7-05 Section 12.8.1.

Where:

R = 1.4 for concrete frame buildings with masonry infill and all other reinforced concrete buildings.

EXCEPTION: R = 1.0 for single-story buildings. The R value in ASCE 7-05 Table 12.2-1 for new building design shall not be used for story drift determination.

C. Structure period. The value of T may be determined by either Method A or B as prescribed by ASCE 7-05 Section 12.8.2. The structure period calculated by Method B need not be limited to a percent of the value obtained by Method A.

D. Vertical distribution of forces. The base shear shall be distributed over the height of the structure in conformance with Formula (71-6).

$$C_{vx} = \left| \frac{w_x h_x^{\,k}}{\sum_{i=1}^{i=n} w_i h_i^{\,k}} \right| \quad (71\text{-}6)$$

Where:

C_{vx} = vertical distribution factor to be applied to V to obtain the story force at level x.

k = an exponent related to building period as follows:

For buildings having a period of 0.4 seconds or less,

k = 1.0

For buildings having a period of 2.0 seconds or more,

k = 2.0

For buildings having a period between 0.4 and 2.0 seconds, k may be taken as two (2) or determined by linear interpolation between one (1) and two (2).

E. Horizontal distribution of shear. The effective stiffness of elements shall be used for the horizontal distribution of shear.

F. Horizontal torsional moments. Provision shall be made for increased displacements resulting from horizontal torsion. The effects of torsional moments shall be included in the determination of the effective stiffness of elements and systems. Reinforced concrete floors may be considered as rigid diaphragms.

G. Effective stiffness. The effective stiffness of concrete and masonry elements shall be determined as prescribed in Subsection 18.71.060.D.

H. Material characteristics. Material characteristics shall be determined as prescribed in Subsection 18.71.060.F.

I. Story drift limitations. Story drift limits shall be as prescribed in Subsection 18.71.060.G.

J. Compressive strain determination. Compressive strain shall be determined as prescribed in Subsection 18.71.060.H.

K. Shear strength limitation. The in-plane shear strength shall equal or exceed the shear forces determined as prescribed in Subsection 18.71.060.I.

18.71.080 – Simplified analysis procedure.

A. General. Structures conforming to the requirements of this section may be analyzed for having a required strength by a simplified analysis procedure.

B. Required features of the building. The building shall conform to all the following features, or the building shall be analyzed by the equivalent lateral force procedure or the dynamic lateral force procedure as prescribed by Subsection 18.71.050.D.

1. The lateral-resisting elements of the building shall be reinforced concrete shear walls or frames with solid masonry infills and infills which have openings in the masonry infills not exceeding ten percent (10%) of the gross area of the infill panel which has the opening(s).

2. The effective shear area of reinforced concrete shear walls on each orthogonal axis shall be calculated by passing a horizontal plane through each story level. The height of the plane shall be that height where the area of the shear walls is a minimum.

3. The reinforced concrete elements shall have no visible deterioration of concrete or reinforcement.

4. The vertical elements in the lateral-load-resisting system shall not have significant strength discontinuities; the story strength in any story shall not be less than ninety percent (90%) of the strength of the story above.

5. The lateral-force-resisting elements in all story levels shall form a system that is not subject to significant torsion. Significant torsion is the condition where the distance between the story center of rigidity and the story center of mass is greater than twenty percent (20%) of the width of the structure in the corresponding plan dimension.

6. The minimum ratio of area of reinforcement to gross area of wall in existing reinforced concrete shear walls shall be 0.0015 in both the vertical and horizontal direction or the minimum ratio of axial reinforcement in the columns of frames containing infills shall be 0.01.

7. The ratio of total height to base length of cantilevered or coupled shear walls shall be two (2) or less. The ratio of clear height to in-plane depth of piers in a shear wall shall be two (2) or

less. Shear walls or piers having a height to in-plane depth ratio greater than two (2) shall be given an effective shear area of one-half (1/2) their area.

8. All concrete frames with infilled panels conforming to Subsection 18.71.080.B.1 above shall have total height to base length ratios of two (2) to one (1) or less.

C. Analysis procedure.

1. General. Supplemental elements may be added to the existing building to bring the structure into conformance with Subsection 18.71.090.B.

2. Seismic loading. The seismic loading shall be calculated by Subsection 18.71.070.B. The loading of each story level shall be calculated by Formula (71-6) of Subsection 18.71.070.D.

3. Relative rigidities. The relative rigidity of reinforced concrete shear walls may be based on the stiffness of uncracked sections. The relative rigidity of infill panels may be calculated using a common modulus of elasticity. Use of a combination of infills and reinforced concrete or masonry shear walls on any orthogonal axis is prohibited.

4. Required calculations. The calculations may be limited to computation of loads on the reinforced concrete shear walls or infilled frame panels that comply with Subsection 18.71.080.B and computation of the drag and tie forces that develop a complete load path. The loads shall include torsional effects.

D. Required strength of systems and elements.

1. The capacity of all parts of the structure shall exceed the demand calculated by use of the loading specified in Section 18.71.070.

2. The strength of infilled frame systems used for lateral load resistance in this section shall be calculated using only the infilled frames that conform to Subsection 18.71.080.B.1.

E. Shear stress limit.

1. The maximum horizontal shear stress in new and existing reinforced concrete shear walls shall not exceed two (f'c)1/2. For the purpose of this chapter, the horizontal shear stress may be taken as eighty (80) psi without testing as required by Subsection 18.71.060.F.1.

2. The in-plane shear stress in any masonry infilled panel shall not exceed thirty (30) psi. The calculation of shear stresses shall use net section area and only the area of the infilled masonry.

EXCEPTION: The in-plane strength of an infill panel without openings may be calculated by procedures described in published research that were verified by experimental testing and approved by the Building Official.

18.71.090 – Minimum requirements for a limited structural analysis

A. General. Structures conforming to the requirements of this section may be shown to be in conformance with this chapter by submission of the report described in this section.

B. Required features of the building. The building shall conform to all of the following features or the building shall be analyzed as prescribed by Subsection 18.71.050.D.

1. The lateral-load-resisting elements of the building shall be reinforced concrete shear walls.

2. The minimum ratio of area of reinforcement to gross area of the wall shall be 0.0015 in both the vertical and horizontal directions.

3. The reinforced concrete elements shall have no visible deterioration of concrete or reinforcement.

4. The area of concrete shear walls on each orthogonal axis at the first floor level shall be 1.5% of the area of the first floor of the building, where n is the number of floor and roof levels.

5. The area of the shear walls in all stories above the first floor shall not be more than one hundred percent (100%) or less than eighty percent (80%) of the area of shear walls at the first floor.

6. The concrete shear walls in all stories above the first floor shall be directly above the shear walls at the first floor which are used to calculate the percent of shear wall area to floor area.

7. The wall area must be uniformly distributed such that at least eighty percent (80%) of the wall area used in the calculation is symmetrically placed about the center of the building.

8. The area of the shear walls on each orthogonal axis shall be calculated by passing a horizontal plane through the first story level. The height of the plane shall be that height where the area of the shear walls is a minimum.

9. The ratio of total height to base width of cantilevered or coupled shear walls shall be two (2) or less. The ratio of the clear height to in-plane depth of piers in a shear wall shall be two (2) or less. Shear walls or piers having a height to depth ratio greater than two (2) shall be given an effective area of one-half (1/2) of their area.

C. Information required in the report.

1. The report shall include data, sketches, plans and calculations that show conformance with the features given in this section.

2. The registered design professional of record shall meet with the representative of the Department at the site to review the report.

18.71.100 – Determination of the stress-strain relationship of existing unreinforced masonry.

A. Scope. This section covers procedures for determining the expected compressive modulus, peak strain and peak compressive stress of unreinforced brick masonry used for infills in frame buildings.

B. General procedure. The outer wythe of multiple wythe brick masonry shall be tested by inserting two (2) flat jacks into the mortar joints of the outer wythe. The prism height, the vertical distance between the flat jacks, shall be five (5) bricks high. The test location shall have adequate overburden and/or vertical confinement to resist the flat jack forces.

C. Preparation for the test. Remove a mortar joint at the top and bottom of the test prism by saw cutting or drilling and grinding to a smooth surface. The cuts for inserting the flat jacks shall not have a deviation from parallel of more than three-eighths (3/8) inch. The deviation from parallel shall be measured at the ends of the flat jacks. The width of the saw cut shall not exceed the width of the mortar joint. The length of the saw cut on the face of the wall may exceed the length of the flat jacks by not more than twice the thickness of the outer wythe plus one (1) inch.

D. Required equipment. The flat jacks shall be rectangular or with semicircular ends to mimic the radius of the saw blade used to cut the slot for the flat jack. The length of the flat jack shall be eighteen (18) inches maximum and sixteen (16) inches minimum. This length shall be measured

on the longest edge of a flat jack with semicircular ends. The maximum width of the flat jack shall not exceed the average width of the wythe of brick that is loaded. The minimum width of a flat jack shall be three and one-half (3-1/2) inches measured out-to-out of the flat jack. The flat jack shall have a minimum of two (2) ports to allow air in the flat jack to be replaced by hydraulic fluid. The unused port shall be sealed after all the air is forced out of the flat jack. The thickness of the flat jack shall not exceed three quarters (3/4) of the minimum height of the mortar joint. It is recommended that the height of the flat jack be about one-half (1/2) of the width of the slot cut for installation of the flat jack. The remaining space can be filled with steel shim plates having plan dimensions equal to the flat jack.

E. Data acquisition equipment. The strain in the tested prism shall be recorded by gages or similar recording equipment having a minimum range of one ten-thousandth (1/10,000) of an inch. The compressive strain shall be measured on the surface of the prism and shall have a gage length, measured vertically on the face of the prism, of ten (10) inches minimum. The gage points shall be fixed to the wall by drilled-in anchors or by anchors set in epoxy or similar material. The support for the data-recording apparatus shall be isolated from the wall by a minimum of one-sixteenth (1/16) inch so that the gage length used in the calculation of strain can be taken as the measured length between the anchors of the equipment supports. The gaging equipment shall be as close to the face of the prism as possible to minimize the probability of erroneous strain measurements caused by bulging of the prism outward from its original plane.

The compressive strain data shall be measured at a minimum of two (2) points on the vertical face of the prism. These points shall be the one-third points of the length of the flat jacks plus or minus one-half (1/2) inch. As an alternative, the strain may be measured at three (3) points on the face of the prism.

These points shall be spaced at one quarter of the flat jack length plus or minus one-half (1/2) inch.

Horizontal gages at mid-height of the prism may be used to record Poisson strain, but this gage should be considered as recording data secondary in importance to the vertical gages and its placement shall not interfere with placing the vertical gaging as close as possible to the face of the prism.

F. Loading and recording data. The loading shall be applied by hydraulic pumps that add hydraulic fluid to the flat jacks in a controlled method. The application of load shall be incremental and held constant while strains are being recorded. The increasing loading for each cycle of loading shall be divided into a minimum of four (4) equal load increments. The strain shall be recorded at each load step. The decrease in loading shall be divided into a minimum of two (2) equal unloading increments. Strain shall be recorded on the decreasing load steps. The hydraulic pressure shall be reduced to zero and the permanent strain caused by this cycle of loading shall be recorded. This procedure shall be used for each cycle of loading.

The load applied in each cycle of load shall be determined by estimating the peak compressive stress of the existing brick masonry. The hydraulic pressure needed to cause this peak compressive stress in the prism shall be calculated by assuming the area of the loaded prism is equal to the area of the flat jack. A maximum of one-third (1/3) of this pressure, rounded to the nearest twenty-five (25) psi, shall be applied in the specified increments to the peak pressure prescribed for the first cycle of loading. After recording the strain data, this pressure shall be reduced in a controlled manner to each of the specified increments for unloading and for recording data. The maximum jack pressure on the subsequent cycles shall be one-half (1/2), two-thirds (2/3), five-sixths (5/6) and estimated peak pressure. If the estimated peak compressive stress is less than the existing peak compressive stress, the cyclic loading and unloading shall continue using increments of increasing pressure equal to those used prior to the application of estimated peak pressure.

All strain data shall be recorded to one ten-thousandth (1/10,000) of an inch. Jack pressure shall be recorded in increments of twenty-five (25) psi pressure.

G. Quality control. The flat jack shall be calibrated before use by placing the flat jack between bearing plates of two (2) inches minimum thickness in a calibrated testing machine. A calibration curve to convert hydraulic pressure in the flat jack to total load shall be prepared and included in the report of the results of testing. Flat jacks shall be recalibrated after three uses.

The hydraulic pressure in the flat jacks shall be indicated by a calibrated dial indicator having a subdivision of twenty-five (25) psi or less. The operator of the hydraulic pump shall use this dial indicator to control the required increments of hydraulic pressure in loading and unloading.

H. Interpretation of the data. The data obtained from the testing required by Subsection 18.71.060.F.4.b shall be averaged both in expected peak compressive stress and the corresponding peak strain. The envelope of the averaged stress-strain relationship of all tests shall be used for the material model of the masonry in the infilled frame. If two (2) strain measurements have been made on the surface of the prism, these strain measurements shall be averaged for determination of the stress-strain relationship for the test. If three (3) strain measurements have been made on the surface of the prism, the data recorded by the center gage shall be given a weight of two (2) for preparing the average stress-strain relationship for the test.

18.71.110 – Evaluation of existing structural conditions.

The registered design professional of record shall report any observed structural conditions and structural damage that, in the registered design professional's judgment, have imminent life-safety effects on the structure and recommend repairs. Evaluations and repairs shall be reviewed and approved by the Department.

18.71.120 – Materials of construction.

A. General. In addition to the seismic analysis required elsewhere in this chapter, the registered design professional responsible for the seismic analysis of the building shall record the information required by this section on the approved construction documents.

B. Information required. The construction documents shall accurately reflect the results of the engineering investigation and design, and show all pertinent dimensions and sizes for plan review and construction. The following shall be provided:

1. The construction documents of the existing construction shall be adequately dimensioned and furnish adequate details in schedules, notes and sections to fully describe the existing building. The construction documents shall include a foundation plan, floor and roof plans which indicate new work, and existing construction;

2. Elevations of the structural system showing sizes and dimensions;

3. Schedules, sections and details showing reinforcement of walls, slabs, beams, joists, girders, columns and foundations.

EXCEPTION: If copies of the original construction documents are submitted for information during the plan check, the information required by Subsections 18.71.120.B.1 through 18.71.120.B.3 may be limited to areas of and adjacent to new construction on a complete outline at that level of the building;

4. Sections and details showing attachments and joining of new and existing structures. All reinforcement in the existing structure shall be shown in these sections and details;

5. Specifications and/or general notes fully describing demolition, materials and methods, testing and inspection requirements.

C. Registered design professional of record's statement. The responsible registered design professional of record shall state on the approved construction documents the following:

1. "I am responsible for this building's seismic strengthening design in compliance with the minimum seismic resistance standards of Chapter 18.71 of the Long Beach Municipal Code."

or when applicable:

2. "The registered special inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by Section 1704.1 of the California Building Code adopted in Chapter 18.40."

TABLE 71-A RATING CLASSIFICATIONS CLASSIFICATION TYPE OF BUILDING

CLASSIFICATION	TYPE OF BUILDING
Group I	Essential buildings
Group II	Buildings with occupant load of 5,000 or more, or assembly rooms of 1,000 occupants or more, and malls as defined elsewhere in the code.
Group III	1,000 to 4,999 occupants
Group IV	300 to 999 occupants
Group V	All others

TABLE 71-B INITIAL EFFECTIVE MOMENT OF INERTIA OF CONCRETE MEMBERS

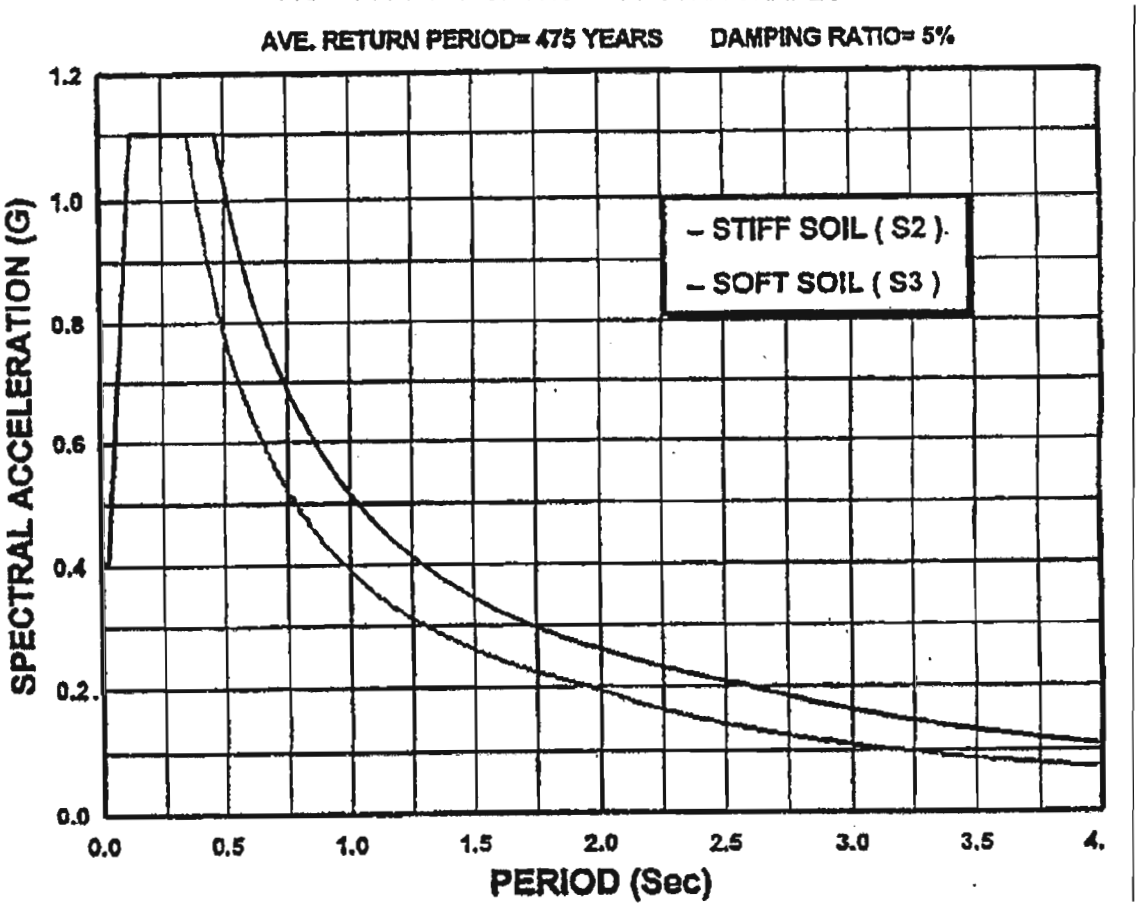
MEMBER	RANGE
Rectangular beams	0.30 - 0.5 I_g
T- and L-shaped beams	0.25 - 0.45 I_g
Columns P > 0.5 $f_c' A_g$	0.7 - 0.9 I_g
Columns P = 0.2 $f_c' A_g$	0.5 - 0.7 I_g
Columns P = - 0.05 $f_c' A_g$	0.3 - 0.5 I_g

TABLE 71-C ASSUMED YIELD STRESS OF EXISTING REINFORCEMENT

TYPE OF REINFORCEMENT AND ERA	ASSUMED YIELD STRESS, ksi
Pre-1940 — Structural and intermediate grade, plain and deformed	45
Pre-1940 — Twisted and hard grade	55
Post-1940 — Structural and intermediate grade	45
Post-1940 — Hard grade	60
ASTM A 615 Grade 40	50
ASTM A 615 Grade 60	70

For SI: 1 ksi = 6.894 MPa.

FIGURE 71-1 RESPONSE SPECTRA SHAPES



CHAPTER 18.72 VOLUNTARY EARTHQUAKE HAZARD REDUCTIOIN IN EXISTING REINFORCED CONCRETE AND REINFORCED MASONRY WALL BUILDINGS WITH FLEXIBLE DIAPHRAGMS

CHAPTER 18.72
VOLUNTARY EARTHQUAKE HAZARD REDUCTIOIN IN EXISTING REINFORCED CONCRETE AND REINFORCED MASONRY WALL BUILDINGS WITH FLEXIBLE DIAPHRAGMS

18.72.010 – Purpose.

The purpose of this chapter is to promote public safety and welfare by reducing the risk of death or injury that may result from the effects of earthquakes on reinforced concrete and masonry wall buildings with flexible diaphragms designed under the Building Codes in effect prior to January 1, 1995. These buildings are potentially hazardous and prone to significant damage, including possible collapse, in a moderate to major earthquake. These structures typically shelter large numbers of persons and property for retail, food markets, food distribution centers, warehousing, aerospace, industrial/manufacturing and general business and office use. Their continued use after an earthquake is also essential to the local economy and its post-earthquake recovery.

The provisions of this chapter are minimum standards for structural seismic resistance established primarily to reduce the risk of loss of life or injury on both subject and adjacent properties and will not necessarily prevent all earthquake damage to an existing building which complies with these standards. This chapter shall not require existing electrical, plumbing, mechanical or fire safety systems to be altered unless they constitute a hazard to life or property.

This chapter provides voluntary retrofit standards for deficient wall anchorage systems on structures that are not subject to the mandatory provisions of Chapter 18.68. When fully followed, these standards will strengthen the portion of the structure that is most vulnerable to earthquake damage.

18.72.020 – Scope.

The voluntary provisions of this chapter shall apply to existing buildings of the following types:

A. Cast-in-place reinforced concrete or masonry wall buildings with flexible diaphragms designed under Building Codes in effect prior to January 1, 1995.

B. Tilt-up concrete wall buildings with flexible diaphragms designed under the Building Codes in effect prior to January 1, 1995, but after January 1, 1976. All existing reinforced masonry or concrete buildings with flexible diaphragms, including tilt-up concrete wall buildings, designed under the Building Code in effect on or after January 1, 1995, shall be designed in conformance with Chapter 16 of the California Building Code adopted in Chapter 18.40.

18.72.030 – Definitions.

For the purposes of this chapter, the applicable definitions in Chapter 2, Sections 1602, 1613.2, 1902, and 2302 of the California Building Code adopted in Chapter 18.40; Sections 1.2, 3.1.1, 4.1, 5.2, 6.2 and 11.2 of ASCE 7-05, and the following shall apply.

"Anchorage system" means the system of all structural elements and connections which support the concrete or masonry wall in the lateral direction, including diaphragms and subdiaphragms, wall anchorage and continuity or crosstie connectors in subdiaphragms and main diaphragms.

"Commenced construction" means construction pursuant to a valid building permit that has progressed to the point that one of the called inspections as required by the Department has been made and the work for which the inspection has been called has been judged by the Department to be substantial and has been approved by the Department.

"Existing building" means an erected building for which a legal building permit and a Certificate of Occupancy have been issued.

"Flexible diaphragm" means any diaphragm constructed of wood structural panel, diagonal or straight wood sheathing, metal decking without a structural concrete topping, or horizontal rod bracing.

"Historical building" means any building designated or currently in the process of being designated as a historical building by an appropriate federal, State or City jurisdiction.

"Reinforced concrete wall" means a concrete wall which has fifty percent (50%) or more of the reinforcing steel required for reinforced concrete in Chapter 19 of the California Building Code adopted in Chapter 18.40.

"Reinforced masonry wall" means a masonry wall which has fifty percent (50%) or more of the reinforcing steel required by Section 2106.5 of the California Building Code adopted in Chapter 18.40.

"Retrofit" strengthens or structurally improves the lateral force-resisting system of an existing building by alteration of existing or addition of new structural elements.

"Tilt-up concrete wall" is a form of precast concrete panel construction either cast in the horizontal position at the site and after curing, lifted and moved into place in a vertical position, or cast off-site in a fabricator's shop.

18.72.040 – Analysis and design.

A. Wall panel anchorage. Concrete and masonry walls shall be anchored to all floors and roofs which provide lateral support for the wall. The anchorage shall provide a positive direct connection between the wall and floor or roof construction capable of resisting a horizontal force equal to thirty percent (30%) of the tributary wall weight for all buildings, and forty-five percent (45%) of the tributary wall weight for essential buildings, or a minimum force of two hundred fifty (250) pounds per linear foot of wall, whichever is greater.

   The required anchorage shall be based on the tributary wall panel assuming simple supports at floors and roof.

   EXCEPTION: An alternate design may be approved by the Building Official when justified by well-established principles of mechanics.

B. Special requirements for wall anchors and continuity ties. The steel elements of the wall anchorage systems and continuity ties shall be designed by the allowable stress design method using a load factor of 1.7. The one-third (1/3) stress increase permitted by Section 1605.3.2 of the California Building Code adopted in Chapter 18.40 shall not be permitted for materials using allowable stress design methods.

   The strength design specified in Section 1912 of the California Building Code adopted in Chapter 18.40, using a load factor of 2.0 in lieu of 1.4 for earthquake loading, shall be used for the design of embedment in concrete.

   Wall anchors shall be provided to resist out-of-plane forces, independent of existing shear anchors.

   EXCEPTION: Existing cast-in-place shear anchors may be used as wall anchors if the tie element can be readily attached to the anchors and if the registered design professional can establish tension values for the existing anchors through the use of approved as-built plans or testing, and through analysis showing that the bolts are capable of resisting the total shear load while being acted upon by the maximum tension force due to seismic loading. Criteria for analysis and testing shall be determined by the Building Official.

   Expansion anchors are not allowed without special approval of the Building Official. Attaching the edge of plywood sheathing to steel ledgers is not considered as complying with the positive

anchoring requirements of the code; and attaching the edge of steel decks to steel ledgers is not considered as providing the positive anchorage of this code unless testing and analysis are performed which establish shear values for the attachment perpendicular to the edge of the deck.

C. Development of anchor loads into the diaphragm. Development of anchor loads into roof and floor diaphragms shall comply with Section 12.11.2.2.3 of ASCE 7-05.

EXCEPTION: If continuously tied girders are present, then the maximum spacing of the continuity ties is the greater of the girder spacing or twenty-four (24) feet.

In wood diaphragms, anchorage shall not be accomplished by use of toenails or nails subject to withdrawal, nor shall wood ledgers, top plates or framing be used in cross-grain bending or cross grain tension. The continuous ties required by Section 12.11.2.2.3 of ASCE 7-05 shall be in addition to the diaphragm sheathing.

Lengths of development of anchor loads in wood diaphragms shall be based on existing field nailing of the sheathing unless existing edge nailing is positively identified on the original construction plans or at the site.

At reentrant corners, continuity collectors may be required for existing return walls not designed as shear walls, to develop into the diaphragm a force equal to the lesser of the rocking or shear capacity of the return wall, or the tributary shear but not exceeding the capacity of the diaphragm. Shear anchors for the return wall shall be commensurate with the collector force. If a truss or beam other than rafters or purlins is supported by the return wall or by a column integral with the return wall, an independent secondary column is required to support the roof or floor members whenever rocking or shear capacity of the return wall is governing.

D. Anchorage at pilasters. Anchorage of pilasters shall be designed for the tributary wall anchoring load per Subsection 18.72.040.A, considering the wall as a two-way slab. The edge of the two-way slab shall be considered "fixed" when there is continuity at pilasters, and considered "pinned" at roof or floor levels. The pilasters or the walls immediately adjacent to the pilasters shall be anchored directly to the roof framing such that the existing vertical anchor bolts at the top of the pilasters are bypassed without causing tension or shear failure at the top of the pilasters.

EXCEPTION: If existing vertical anchor bolts at the top of the pilasters are used for the anchorage, then additional exterior confinement shall be provided.

The minimum anchorage at a floor or roof between the pilasters shall be that specified in Subsection 18.72.040.A.

E. Symmetry. Symmetry of connectors in the anchorage system is required. Eccentricity may be allowed when it can be shown that all components of forces are positively resisted and justified by calculations or tests.

F. Minimum member size. Wood members used to develop anchorage forces to the diaphragm shall be of minimum three-inch nominal width for new construction and replacement. All such members must be designed for gravity and earthquake forces as part of the wall anchorage system. For existing structural members, the allowable stresses shall be without the one-third (1/3) stress increase per Subsection 18.72.040.B.

G. Combination of anchor types. To repair and retrofit existing buildings, a combination of different anchor types of different behavior or stiffness shall not be permitted. The capacity of the new and existing connectors cannot be added.

H. Prohibited anchors. Usage of connectors that were bent or stretched from the intended use shall be prohibited.

I. Crack and damage repairs, evaluation of existing structural alterations. The registered design professional shall report any observed structural conditions and structural damage that have imminent life-safety effects on the buildings and recommend repairs, including alterations such as openings cut in existing wall panels without a building permit. Evaluations and repairs shall be reviewed and approved by the Department.

J. Miscellaneous. Existing mezzanines relying on the concrete or masonry walls for vertical or lateral support shall be anchored to the walls for the tributary mezzanine load. Walls depending on the mezzanine for lateral support shall be anchored per Subsections 18.72.040.A through 18.72.040.C.

EXCEPTION: Existing mezzanines that have independent lateral and vertical support need not be anchored to the concrete or masonry walls.

Existing interior masonry or concrete walls not designed as shear walls, which extend to the floor above or to the roof diaphragm, shall also be anchored for out-of-plane forces per Subsections 18.72.040.A through 18.72.040.C. In the in-plane direction, the walls may be isolated or shall be developed into the diaphragm for a lateral force equal to the lesser of the rocking or shear capacity of the wall, or the tributary shear but not exceeding the diaphragm capacity.

K. Historical buildings. Qualified historical buildings shall be permitted to use alternate building standards or deviations from this chapter in order to preserve their original or restored architectural elements and features. See California Code of Regulations, Title 24, Part 8 (California Historical Building Code) for these standards

18.72.050 – Materials of construction.

All materials permitted by this title, including their appropriate allowable stresses and those existing configurations of materials specified in Chapter 18.68, may be utilized to meet the requirements of this chapter.

18.72.060 – Information required on construction documents.

A. General. In addition to the seismic analysis required elsewhere in this chapter, the licensed registered design professional responsible for the seismic analysis of the building shall record the information required by this section on the approved construction documents.

B. Information required. The construction documents shall accurately reflect the results of the engineering investigation and design and show all pertinent dimensions and sizes for plan review and construction. The following shall be provided:

1. Floor plans and roof plans shall show the existing framing construction, diaphragm construction, proposed wall anchors, crossties and collectors. Existing nailing, anchors, ties and collectors shall also be shown on the plans if these are part of the design, and these structural elements need to be verified in the field.

2. At elevations where there is alterations or damage, the details shall show the roof and floor heights, dimensions of openings, location and extent of existing damage, and proposed repair.

3. Typical concrete or masonry wall sections with wall thickness, height and location of anchors shall be provided.

4. Details shall include the existing and new anchors and the method of development of anchor forces into the diaphragm framing, existing and new crossties, existing and new or improved support of the roof, and floor girders at pilasters or walls.

C. Registered design professional of record's statement. The responsible registered design professional of record shall state on the approved construction documents the following:

1. "I am responsible for this building's seismic strengthening design of the tilt-up concrete wall anchorage system in compliance with the minimum seismic resistance standards of Chapter 18.72 of the Long Beach Municipal Code."

   or when applicable:

2. "The Registered Special Inspector, required as a condition of the use of structural design stresses requiring continuous inspection, will be responsible to me as required by Section 1704.1 of the California Building Code adopted in Chapter 18.40."

CHAPTER 18.73 FLOOD RESISTANT DESIGN AND CONSTRUCTION

CHAPTER 18.73
FLOOD RESISTANT DESIGN AND CONSTRUCTION

18.73.010 – Findings of fact.

The City of Long Beach finds:

A. The flood hazard areas of the City of Long Beach are subject to periodic inundation which results in loss of life and property; creation of health and safety hazards; disruption of commerce and governmental services; extraordinary public expenditures for flood protection and relief; and impairment of the tax base, all of which adversely affect public health, safety and general welfare.

B. These flood losses are caused by uses that are inadequately elevated, floodproofed, or protected from flood damage. The cumulative effect of obstructions in areas of special flood hazards which increase flood heights and velocities also contribute to the flood loss.

18.73.020 – Statement of purpose.

It is the purpose of this chapter to promote the public health, safety and general welfare, and to minimize public and private losses due to flood conditions in specific areas by provisions designed:

A. To minimize expenditure of public money for costly flood control projects;

B. To minimize the need for rescue and relief efforts associated with flooding, generally undertaken at the expense of the general public;

C. To minimize prolonged business interruptions;

D. To minimize damage to public facilities and utilities such as water and gas mains; electric, telephone and sewer lines; and streets and bridges located in areas of special flood hazard;

E. To help maintain a stable tax base by providing for the sound use and development of areas of special flood hazard so as to minimize future blighted areas caused by flood damage;

F. To ensure that potential buyers are notified that property is in an area of special flood hazard; and

G. To ensure that those who occupy special flood hazard areas assume responsibility for their actions.

18.73.030 – Methods of reducing flood losses.

In order to accomplish its purposes, this chapter includes methods and provisions for:

A. Restricting and prohibiting uses which are dangerous to health, safety and property due to water or erosion hazards, or which result in damaging increase in erosion, flood heights or flood velocities;

B. Requiring that uses vulnerable to floods, including facilities which serve such uses, be protected against flood damage at the time of initial construction;

C. Controlling the alteration of natural flood plains, stream channels and natural protective barriers which help accommodate or channel flood waters;

D. Controlling filling, dredging, grading, and other development which may increase flood damage; and

E. Preventing or regulating the construction of flood barriers which will unnaturally divert flood waters or which may increase flood hazards in other areas.

18.73.040 – Definitions.

Unless specifically defined below, words or phrases used in this chapter shall be interpreted so as to give them the meaning they have in common usage and to give this chapter its most reasonable application. As used in this chapter, the words and phrases listed in this section shall have the meaning given them as follows:

A. "Accessory use" means a use which is incidental and subordinate to the principal use of the parcel of land on which it is located.

B. "Alluvial fan" means a geomorphologic feature characterized by a cone or fan-shaped deposit of boulders, gravel, and fine sediments that have been eroded from mountain slopes, transported by flood flows, and then deposited on the valley floors, and which is subject to flash flooding, high velocity flows, debris flows, erosion, sediment movement and deposition, and channel migration.

C. "Apex" means the point of highest elevation on an alluvial fan, which on undisturbed fans is generally the point where the major stream that formed the fan emerges from the mountain front.

D. "Appeal" means a request for a review of the Floodplain Administrator's interpretation of any provision of this chapter.

E. "Area of shallow flooding" means a designated AO, AH, AR/AO or AR/AH Zone on the Flood Insurance Rate Map (FIRM). The base flood depths range from one (1) to three (3) feet; a clearly defined channel does not exist; the path of flooding is unpredictable and indeterminate; and, velocity flow may be evident. Such flooding is characterized by ponding or sheet flow.

F. "Area of special flood hazard"—see "Special flood hazard area".

G. "AR Zone" means a special flood hazard area that results from the decertification of a previously accredited flood protection system that is determined to be in the process of being restored to provide a 100-year or greater level of flood protection.

H. "Base flood" means the flood having a one percent (1%) chance of being equaled or exceeded in any given year (also called the 100-year flood). Base flood is the term used throughout this chapter.

I. "Basement" means any area of the building having its floor subgrade—i.e., below ground level—on all sides.

J. "Breakaway walls" means any type of walls, whether solid or lattice, and whether constructed of concrete, masonry, wood, metal, plastic or any other suitable building material which is not part of the structural support of the building and which is designed to break away, under abnormally high tides or wave action, without causing any damage to the structural integrity of the building on which they are used or any buildings to which they might be carried by flood waters. A breakaway wall shall have a safe design loading resistance of not less than ten (10) and no more than twenty (20) pounds per square foot. Use of breakaway walls must be certified by a register design professional licensed in the State of California to practice as such and shall meet the following conditions:

1. Breakaway wall collapse shall result from a water load less than that which would occur during the base flood, and

2. The elevated portion of the building shall not incur any structural damage due to the effects of wind and water loads acting simultaneously in the event of the base flood.

K. "Building"—see "Structure".

L. "Coastal high hazard area" means an area of special flood hazard extending from offshore to the inland limit of a primary frontal dune along an open coast and any other area subject to high velocity wave action from storms or seismic sources. It is an area subject to high velocity waters, including coastal and tidal inundation or tsunamis. The area is designated on a Flood Insurance Rate Map (FIRM) as Zone V1-30, VE, or V.

M. "Development" means any manmade change to improved or unimproved real estate, including, but not limited to, buildings or other structures, mining, dredging, filling, grading, paving, excavation or drilling operations or storage of equipment or materials.

N. "Developed areas" means an area of a community that is:

1. A primarily urbanized, built-up area that is a minimum of twenty (20) contiguous acres, has basic urban infrastructure, including roads, utilities, communications, and public facilities, to sustain industrial, residential, and commercial activities, and

   a. Within which seventy-five percent (75%) or more of the parcels, tracts, or lots contain commercial, industrial, or residential structures or uses; or

   b. Is a single parcel, tract, or lot in which seventy-five percent (75%) of the area contains existing commercial or industrial structures or uses; or

   c. Is a subdivision developed at a density of at least two (2) residential structures per acre within which seventy-five percent (75%) or more of the lots contain existing residential structures.

2. Undeveloped parcels, tracts, or lots, the combination of which is less than twenty (20) acres and contiguous on at least three (3) sides to areas meeting the criteria of paragraph 1.

3. A subdivision that is a minimum of twenty (20) contiguous acres that has obtained all necessary government approvals, provided that the actual "start of construction" of structures has occurred on at least:

   a. Ten percent (10%) of the lots or remaining lots of a subdivision; or

   b. Ten percent (10%) of the maximum building coverage or remaining building coverage allowed for a single lot subdivision and construction of structures is underway. Residential subdivisions must meet the density criteria in Subsection 18.73.040.N.1.c.

O. "Encroachment" means the advance or infringement of uses, plant growth, fill, excavation, buildings, permanent structures or development into a floodplain which may impede or alter the flow capacity of a floodplain.

P. "Existing manufactured home park or subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including, at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed before September 15, 1983, the effective date of the floodplain management regulations adopted by the City of Long Beach.

Q. "Expansion to an existing manufactured home park or subdivision" means the preparation of additional sites by the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads).

R. "Flood, flooding, or flood water" means a general and temporary condition of partial or complete inundation of normally dry land areas from the overflow of inland or tidal waters; the unusual and rapid accumulation or runoff of surface waters from any source.

S. "Flood Insurance Rate Map (FIRM)" means the official map on which the Federal Emergency Management Agency or Federal Insurance Administration has delineated both the areas of special flood hazards, the floodway and the risk premium zones applicable to the community.

T. "Flood Insurance Study" means the official report provided by the Federal Insurance Administration that includes flood profiles, the FIRM, and the water surface elevation of the base flood.

U. "Floodplain or flood-prone area" means any land area susceptible to being inundated by water from any source—see "Flooding".

V. "Floodplain Administrator" is the individual appointed to administer and enforce the floodplain management regulations.

W. "Floodplain management" means the operation of an overall program of corrective and preventive measures for reducing flood damage and preserving and enhancing, where possible, natural resources in the floodplain, including but not limited to emergency preparedness plans, flood control works, floodplain management regulations, and open space plans.

X. "Floodplain management regulations" means this chapter and other zoning ordinances, subdivision regulations, Building Codes, health regulations, special purpose ordinances (such as grading) and other applications of police power which control development in flood-prone areas. This term describes federal, State or local regulations in any combination thereof which provide standards for preventing and reducing flood loss and damage.

Y. "Floodproofing" means any combination of structural and nonstructural additions, changes, or adjustments to structures which reduce or eliminate flood damage to real estate or improved real property, water and sanitary facilities, structures, and their contents.

Z. "Floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot. Also referred to as "Regulatory Floodway".

AA. "Floodway fringe" is that area of the floodplain on either side of the "Regulatory Floodway" where encroachment may be permitted.

BB. "Fraud and victimization" as related to Section 18.73.310 et seq. of this chapter means that the variance granted must not cause fraud on or victimization of the public. In examining this requirement, the City Council will consider the fact that every newly constructed building adds to government responsibilities and remains a part of the community for fifty (50) to one hundred (100) years. Buildings that are permitted to be constructed below the base flood elevation are subject during all those years to increased risk of damage from floods, while future owners of the property and the community as a whole are subject to all the costs, inconvenience, danger, and suffering that those increased flood damages bring. In addition, future owners may purchase the property, unaware that it is subject to potential flood damage, and can be insured only at very high flood insurance rates.

CC. "Functionally dependent use" means a use which cannot perform its intended purpose unless it is located or carried out in close proximity to water. The term includes only docking facilities, port facilities that are necessary for the loading and unloading of cargo or passengers, and ship building and ship repair facilities, and does not include long-term storage or related manufacturing facilities.

DD. "Governing body" is the City Council of the City of Long Beach that is empowered to adopt and implement regulations to provide for the public health, safety and general welfare of its citizenry.

EE. "Hardship" as related to Section 18.73.310 et seq. of this chapter means the exceptional hardship that would result from a failure to grant the requested variance. The City of Long Beach requires that the variance be exceptional, unusual, and peculiar to the property involved. Mere economic or financial hardship alone is not exceptional. Inconvenience, aesthetic considerations, physical handicaps, personal preferences, or the disapproval of one's neighbors likewise cannot, as a rule, qualify as an exceptional hardship. All of these problems can be resolved through other means without granting a variance, even if the alternative is more expensive, or requires the property owner to build elsewhere or put the parcel to a different use than originally intended.

FF. "Highest adjacent grade" means the highest natural elevation of the ground surface prior to construction next to the proposed walls of the structure.

GG. "Historic structure" means any structure that is:

1. Listed individually in the National Register of Historic Places (a listing maintained by the Department of Interior) or preliminarily determined by the Secretary of the Interior as meeting the requirements for individual listing on the National Register;

2. Certified or preliminarily determined by the Secretary of the Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined by the Secretary to qualify as a registered historic district;

3. Individually listed on the California State Inventory of Historic Places; or

4. Individually listed on the Long Beach inventory of historic places.

HH. "Levee" means a manmade structure, usually an earthen embankment, designed and constructed in accordance with sound engineering practices to contain, control or divert the flow of water so as to provide protection from temporary flooding.

II. "Levee system" means a flood protection system which consists of a levee, or levees, and associated structures, such as closure and drainage devices, which are constructed and operated in accord with sound engineering practices.

JJ. "Lowest floor" means the lowest floor of the lowest enclosed area, including basement (see "Basement" definition).

1. An unfinished or flood resistant enclosure below the lowest floor that is usable solely for parking of vehicles, building access or storage in an area other than a basement area, is not considered a building's lowest floor provided it conforms to applicable non-elevation design requirements, including, but not limited to:

   a. The wet floodproofing standards in Subsection 18.73.230.C.4;

   b. The anchoring standards in Subsection 18.73.230.A;

   c. The construction materials and methods standards in Subsection 18.73.230.B;

   d. The standards for utilities in Section 18.73.240.

2. For residential structures, all subgrade enclosed areas are prohibited as they are considered to be basements (see "Basement" definition). This prohibition includes below-grade garages and storage areas.

KK. "Manufactured home" means a structure, transportable in one or more sections, which is built on a permanent chassis and is designed for use with or without a permanent foundation when connected to the required utilities. The term "manufactured home" does not include a "recreational vehicle".

LL. "Manufactured home park or subdivision" means a parcel (or contiguous parcels) of land divided into two (2) or more manufactured home lots for rent or sale.

MM. "Mean sea level" means, for purposes of the National Flood Insurance Program, the National Geodetic Vertical Datum (NGVD) of 1929 or other datum, to which base flood elevations shown on a community's Flood Insurance Rate Map are referenced.

NN. "New construction" for floodplain management purposes, means structures for which the "start of construction" commenced on or after September 15, 1983, the effective date of floodplain management regulations adopted by the City of Long Beach, and includes any subsequent improvements to such structures.

OO. "New manufactured home park or subdivision" means a manufactured home park or subdivision for which the construction of facilities for servicing the lots on which the manufactured homes are to be affixed (including at a minimum, the installation of utilities, the construction of streets, and either final site grading or the pouring of concrete pads) is completed on or after September 15, 1983, the effective date of floodplain management regulations adopted by this community.

PP. "Obstruction" includes, but is not limited to, any dam, wall, wharf, embankment, levee, dike, pile, abutment, protection, excavation, channelization, bridge, conduit, culvert, building, wire, fence, rock, gravel, refuse, fill, structure, vegetation or other material in, along, across or projecting into any watercourse which may alter, impede, retard or change the direction and/or velocity of the flow of water, or due to its location, its propensity to snare or collect debris carried by the flow of water, or its likelihood of being carried downstream.

QQ. "One-hundred-year flood" or "100-year flood"—see "Base flood".

RR. "Primary frontal dune" means a continuous or nearly continuous mound or ridge of sand with relatively steep seaward and landward slopes immediately landward and adjacent to the beach and subject to erosion and overtopping from high tides and waves during major coastal storms. The inland limit of the primary frontal dune occurs at the point where there is a distinct change from a relatively mild slope.

SS. "Public safety and nuisance" as related to Section 18.73.310 et seq. of this chapter means that the granting of a variance must not result in anything which is injurious to safety or health of an entire community or neighborhood, or any considerable number of persons, or unlawfully obstructs the free passage or use, in the customary manner, of any navigable lake, or river, bay, stream, canal, or basin.

TT. "Recreational vehicle" means a vehicle which is:

1. Built on a single chassis;

2. Four hundred (400) square feet or less when measured at the largest horizontal projection;

3. Designed to be self-propelled or permanently towable by a light-duty truck; and

4. Designed primarily not for use as a permanent dwelling but as temporary living quarters for recreational, camping, travel, or seasonal use.

UU. "Regulatory floodway" means the channel of a river or other watercourse and the adjacent land areas that must be reserved in order to discharge the base flood without cumulatively increasing the water surface elevation more than one (1) foot.

VV. "Remedy a violation" means to bring the structure or other development into compliance with State or City floodplain management regulations or, if this is not possible, to reduce the impacts of its noncompliance. Ways that impacts may be reduced include protecting the structure or other affected development from flood damages, implementing the enforcement provisions of this chapter or otherwise deterring future similar violations, or reducing State or federal financial exposure with regard to the structure or other development.

WW. "Riverine" means relating to, formed by, or resembling a river (including tributaries), stream, brook, etc.

XX. "Sand dunes" means naturally occurring accumulations of sand in ridges or mounds landward of the beach.

YY. "Sheet flow area" see "Area of shallow flooding".

ZZ. "Special flood hazard area (SFHA)" means an area in the floodplain subject to a one percent (1%) or greater chance of flooding in any given year. It is shown on a FIRM as Zone A, AO, A1-A30, AE, A99, AR, AR/A1-A30, AR/AE, AR/AO, AR/AH, AR/A, AH, V1-V30, VE or V.

AB. "Start of construction" includes substantial improvement and other proposed new development and means the date the building permit was issued, provided the actual start of construction, repair, reconstruction, rehabilitation, addition, placement, or other improvement was within one hundred eighty (180) days from the date of the permit. The actual start means either the first placement of permanent construction of a structure on a site, such as the pouring of slab or footings, the installation of piles, the construction of columns, or any work beyond the stage of excavation; or the placement of a manufactured home on a foundation. Permanent construction does not include land preparation, such as clearing, grading, and filling; nor does it include the installation of streets and/or walkways; nor does it include excavation for a basement, footings, piers, or foundations or the erection of temporary forms; nor does it include the installation on the property of accessory buildings, such as garages or sheds not occupied as dwelling units or not part of the main structure. For a substantial improvement, the actual start of construction means the first alteration of any wall, ceiling, floor, or other structural part of a building, whether or not that alteration affects the external dimensions of the building.

AC. "Structure" means a walled and roofed building that is principally above ground; this includes a gas or liquid storage tank or a manufactured home.

AD. "Substantial damage" means damage of any origin sustained by a structure whereby the cost of restoring the structure to its before damaged condition would equal or exceed fifty percent (50%) of the market value of the structure before the damage occurred.

AE. "Substantial improvement" means any reconstruction, rehabilitation, addition, or other proposed new development of a structure, the cost of which equals or exceeds fifty percent (50%) of the market value of the structure before the "start of construction" of the improvement. This term includes structures which have incurred "substantial damage", regardless of the actual repair work performed. The term does not, however, include either:

1. Any project for improvement of a structure to correct existing violations or State or local health, sanitary, or safety code specifications which have been identified by a local code enforcement official and which are the minimum necessary to assure safe living conditions, or

2. Any alteration of a "historic structure", provided that the alteration will not preclude the structure's continued designation as a "historic structure".

AF. "V zone"—see "Coastal high hazard area".

AG. "Variance" means a grant of relief from the requirements of this chapter which permits construction in a manner that would otherwise be prohibited by this chapter.

AH. "Violation" means the failure of a structure or other development to be fully compliant with this chapter. A structure or other development without the elevation certificate, other certifications, or other evidence of compliance required in this chapter is presumed to be in violation until such time as that documentation is provided.

AI. "Water surface elevation" means the height, in relation to the National Geodetic Vertical Datum (NGVD) of 1929, (or other datum, where specified) of floods of various magnitudes and frequencies in the floodplains of coastal or riverine areas.

AJ. "Watercourse" means a lake, river, creek, stream, wash, arroyo, channel or other topographic feature on or over which waters flow at least periodically. Watercourse includes specifically designated areas in which substantial flood damage may occur.

18.73.050 – Lands to which this Ordinance applies.

This chapter shall apply to all areas of special flood hazards within the jurisdiction of the City of Long Beach.

18.73.060 – Basis for establishing the areas of special flood hazard.

The areas of special flood hazard identified by the Federal Insurance Administration (FIA), of the Federal Emergency Management Agency (FEMA), in a scientific and engineering report entitled "The Flood Insurance Study for the City of Long Beach", dated July 6, 1998, with accompanying Flood Insurance Rate Map (FIRMs), and all subsequent amendments and/or revisions, are hereby adopted by reference and declared to be a part of this chapter. This flood insurance study and attendant mapping is the minimum area of applicability of this chapter and may be supplemented by studies for other areas which allow implementation of this chapter and which are recommended to the City Council by the Floodplain Administrator. The Flood Insurance Study and FIRMs are on file in the office of the Department of Public Works, 333 West Ocean Boulevard, Long Beach, California 90802.

18.73.070 – Compliance.

No structure or land shall hereafter be constructed, located, extended, converted or altered without full compliance with the terms of this chapter and other applicable regulations. Violation of the requirements (including violations of conditions and safeguards established in connection with conditions) shall constitute a misdemeanor. Nothing herein shall prevent the City of Long Beach from taking such lawful action as is necessary to prevent or remedy any violations.

18.73.080 – Abrogations and greater restrictions.

This chapter is not intended to repeal, abrogate or impair any existing easements, covenants or deed restrictions. However, where this chapter and another ordinance, easement, covenant or deed restriction conflict or overlap, whichever imposes the more stringent restrictions shall prevail.

18.73.090 – Interpretation.

In the interpretation and application of this chapter, all provisions shall be:

A. Considered as minimum requirements;

B. Liberally construed in favor of the government body; and

C. Deemed neither to limit nor repeal any other powers lawfully granted.

18.73.100 – Warning and disclaimer of liability.

The degree of flood protection required by this chapter is considered reasonable for regulatory purposes and is based on scientific and engineering considerations. Larger floods can and will occur on occasion. Flood heights may be increased by manmade or natural causes. This chapter does not imply that land outside areas of special flood hazards or uses permitted within such areas will be free from flooding or flood damages. This chapter shall not create liability on the part of the City of Long Beach, any officer or employee thereof, the State of California, the Federal Insurance Administration, or the Federal Emergency Management Agency, for any flood damages that result from reliance on this chapter or any administrative decision made hereunder.

18.73.110 – Severability.

This chapter and the various parts thereof are hereby declared to be severable. Should any section of this chapter be declared by the courts to be unconstitutional or invalid, such decision shall not affect the validity of this chapter as a whole, or any portion thereof other than the section so declared to be unconstitutional or invalid.

18.73.120 – Establishment of development permit.

A development permit shall be obtained before any construction or other development begins within any area of special flood hazard established in Section 18.73.060. Application for a development permit shall be made on forms furnished by the Floodplain Administrator and may include, but not be limited to: plans in duplicate drawn to scale showing the nature, location, dimensions, and elevation of the area in question; existing or proposed structures, fill, storage of materials, drainage facilities; and the location of the foregoing. Specifically, the following information is required:

A. Proposed elevation in relation to mean sea level, of the lowest floor, including basements, of all structures—in Zone AO, elevation of highest adjacent grade and proposed elevation of lowest floor of all structures; or

B. Proposed elevation in relation to mean sea level to which any nonresidential structure will be floodproofed, if required in Subsection 18.73.230.C.4; and

C. All appropriate certifications listed in Section 18.73.190; and

D. Description of the extent to which any watercourse will be altered or relocated as a result of proposed development.

18.73.130 – Designation of the local administrator.

The City Manager or his designated representative is hereby appointed Floodplain Administrator to administer and implement this chapter by granting or denying development permits in accordance with its provisions.

18.73.140 – Duties and responsibilities of the Floodplain Administrator.

The duties of the Floodplain Administrator shall include but not be limited to the duties set forth in Sections 18.73.150 through 18.73.210.

18.73.150 – Permit review.

The Floodplain Administrator shall:

A. Review all development permits to determine that the permit requirements of this chapter have been satisfied;

B. Review all development permits to determine that the proposed development does not adversely affect the carrying capacity of areas where base flood elevations have been determined, but a floodway has not been designated. For purposes of this chapter, "adversely affects" means that the cumulative effect of the proposed development when combined with all other existing and anticipated development will increase the water surface elevation of the base flood more than one (1) foot at any point;

C. Review proposed development to assure that all required State and federal permits have been obtained;

D. Review all development permits to determine that the site is reasonably safe from flooding.

18.73.160 – Use of other base flood data.

When base flood elevation data has not been provided in accordance with Section 18.73.060, the Floodplain Administrator shall obtain, review and reasonably utilize any base flood elevation data available from a federal, State or other source, in order to administer Section 18.73.230. Any such information shall be submitted to the City Council for adoption.

18.73.170 – AR Zone duties of the Floodplain Administrator.

The Floodplain Administrator shall:

A. Use the adopted official map or legal description of those designated developed areas within Zones AR, AR/A1-30, AR/AE, AR/AH, AR/A, AR/AO as defined in Section 18.73.040 to determine if a proposed project is in a developed area.

B. Determine the base flood elevation to be used for individual projects within the developed areas, areas not designated as developed areas, and dual zone areas (see Section 18.73.290).

C. Require the applicable standards in Section 18.73.230.

D. Provide written notification to the permit applicant that the area has been designated as an AR, AR/A1-30, AR/AE, AR/AH, AR/AO, or AR/A Zone and whether the structure will be elevated or protected to or above the AR base flood elevation.

18.73.180 – Notification of other agencies.

Where there is an alteration or relocation of a watercourse, the Floodplain Administrator shall:

A. Notify adjacent communities and the California Department of Water Resources prior to the alteration or relocation;

B. Submit evidence of such notification to the Federal Insurance Administration, Federal Emergency Management Agency; and

C. Assure that the flood carrying capacity within the altered or relocated portion of said watercourse is maintained.

18.73.190 – Information to be obtained and maintained.

The Floodplain Administrator shall obtain and maintain for public inspection and shall make available as needed for flood insurance policies:

A. Certification required by Subsection 18.73.230.C.2 (lowest floor elevations);

B. Certification required by Subsection 18.73.230.C.3 (elevation or floodproofing of nonresidential structures);

C. Certification required by Subsection 18.73.230.C.4 (wet floodproofing standard);

D. Certification of elevation required by Subsection 18.73.250.B (subdivision standards);

E. Certification required by Subsection 18.73.280.A (floodway encroachments); and

F. Information required by Section 18.73.300 (coastal construction standards).

18.73.200 – Interpretation of FIRM boundaries.

The Floodplain Administrator shall make interpretations where needed as to the exact location of the boundaries of areas of special flood hazards, for example, where there appears to be a conflict between a mapped boundary and actual field conditions. The person contesting the boundaries shall be given a reasonable opportunity to appeal the interpretation as provided for in Sections 18.73.310, 18.73.320 and 18.73.330.

18.73.210 – Remedial action.

The Floodplain Administrator shall take action to remedy violations of this chapter as specified in Section 18.73.070.

18.73.220 – Appeals.

The City Council shall hear and decide appeals when it is alleged there is an error in any requirement, decision, or determination made by the Floodplain Administrator in the enforcement or administration of this chapter.

18.73.230 – Standards of construction.

In all areas of special flood hazard, the following standards are required:

A. Anchoring.

1. All new construction and substantial improvements shall be adequately anchored to prevent flotation, collapse or lateral movement of the structure resulting from hydrodynamic and hydrostatic loads, including the effects of buoyancy.

2. All manufactured homes shall meet the anchoring standards of Section 18.73.260.

B. Construction materials and methods.

1. All new construction and substantial improvements shall be constructed with materials and utility equipment resistant to flood damage.

2. All new construction and substantial improvements shall use methods and practices that minimize flood damage.

3. Electrical, heating, ventilation, plumbing, and air-conditioning equipment and other service facilities shall be designed and/or located so as to prevent water from entering or accumulating within the components during conditions of flooding.

4. If within Zones AH, AO, AR/AH, or AR/AO, there shall be adequate drainage paths around structures on slopes to guide flood waters around and away from the proposed structures.

C. Elevation and floodproofing. (See definitions for "basement", "lowest floor", "new construction", "substantial damage" and "substantial improvement").

1. For AR Zone requirements, see Section 18.73.290;

2. Residential construction, new or substantial improvement, shall have the lowest floor, including basement:

   a. In an AO Zone, elevated above the highest adjacent grade to a height equal to or exceeding the depth number specified in feet on the FIRM, or elevated at least two (2) feet above the highest adjacent grade if no depth number is specified.

   b. In an A Zone, elevated to or above the base flood elevation, as determined by the City.

   c. In all other zones, elevated to or above the base flood elevation.

   d. Upon the completion of the structure, the elevation of the lowest floor including basement shall be certified by a register design professional licensed in the State of California to practice as such, and verified by the Building Official or a duly authorized representative to be properly elevated. Such certification or verification shall be provided to the Floodplain Administrator.

3. Nonresidential construction, new or substantial improvement, shall either be elevated in conformance with Subsection 18.73.230.C.2 or, together with attendant utility and sanitary facilities, shall:

   a. Be floodproofed below the elevation recommended under Subsection 18.73.230.C.2 so that the structure is watertight with walls substantially impermeable to the passage of water; and

   b. Have structural components capable of resisting hydrostatic and hydrodynamic loads and effects of buoyancy; and

   c. Be certified by a register design professional licensed in the State of California to practice as such that the standards of this Subsection 18.73.230.C.3 are satisfied. Such certification shall be provided to the Floodplain Administrator.

4. All new construction and substantial improvement with fully enclosed areas below the lowest floor (excluding basements) that are usable solely for parking of vehicles, building access or storage, and which are subject to flooding, shall be designed to automatically equalize hydrostatic flood forces on exterior walls by allowing for the entry and exit of floodwater. Designs for meeting this requirement must meet or exceed the following minimum criteria:

   a. Be certified by a register design professional licensed in the State of California to practice as such; or

   b. Have a minimum of two (2) openings having a total net area of not less than one square inch for every square foot of enclosed area subject to flooding. The bottom of all openings shall be no higher than one (1) foot above grade. Openings may be equipped with screens, louvers, valves or other coverings or devices provided that they permit the automatic entry and exit of floodwater.

5. Manufactured homes shall also meet the standards in Section 18.73.260.

18.73.240 – Standards for utilities.

A. All new and replacement water supply and sanitary sewer systems shall be designed to minimize or eliminate infiltration of flood waters into the system and discharge from systems into flood waters.

B. On-site waste disposal systems shall be located to avoid impairment to the system or contamination from the system during flooding.

18.73.250 – Standards for subdivisions.

A. All preliminary subdivision proposals shall identify the flood hazard area and the elevation of the base flood.

B. All final subdivision plans shall provide the elevation of proposed structures and pads. If the site is filled above the base flood, the final pad elevation shall be certified by a register design professional licensed in the State of California to practice as such and provided to the Floodplain Administrator.

C. All subdivision proposals shall be consistent with the need to minimize flood damage.

D. All subdivision proposals shall have public facilities and utilities such as sewer, gas, electrical and water systems located and constructed to minimize flood damage.

E. All subdivisions shall provide adequate drainage to reduce exposure to flood hazards.

18.73.260 – Standards for manufactured homes and manufactured home parks and subdivisions.

A. All manufactured homes that are placed or substantially improved, within zones A1-30, AH, and AE on the community's Flood Insurance Rate Map, on sites located:

1. Outside of a manufactured home park or subdivision;

2. In a new manufactured home park or subdivision;

3. In an expansion to an existing manufactured home park or subdivision; or

4. In an existing manufactured home park or subdivision on a site upon which a manufactured home has incurred "substantial damage" as the result of a flood, shall be elevated on a permanent foundation such that the lowest floor of the manufactured home is elevated to or above the base flood elevation and be securely anchored to an adequately anchored foundation system to resist flotation, collapse and lateral movement.

B. All manufactured homes that are placed or substantially improved on sites located within Zones V1-30, V, and VE on the community's Flood Insurance Rate Map will meet the requirements of Subsection 18.73.260A and Section 18.73.300.

C. All manufactured homes to be placed or substantially improved on sites in an existing manufactured home park or subdivision within Zones A1-30, AH, AE, V1-30, V, and VE on the community's Flood Insurance Rate Map that are not subject to the provisions of Subsection 18.73.260.A will be securely fastened to an adequately anchored foundation system to resist flotation, collapse, and lateral movement, and be elevated so that either the:

1. Lowest floor of the manufactured home is at or above the base flood elevation; or

2. Manufactured home chassis is supported by reinforced piers or other foundation elements of at least equivalent strength that are no less than thirty-six (36) inches in height above grade.

18.73.270 – Standards for recreational vehicles.

A. All recreational vehicles placed on sites within zones A1-30, AH, and AE on the community's Flood Insurance Rate Map will either:

1. Be on the site for fewer than one hundred eighty (180) consecutive days, and be fully licensed and ready for highway use—a recreational vehicle is ready for highway use if it is on its wheels or jacking system, is attached to the site only by quick disconnect type utilities and security devices, and has no permanently attached additions, or

2. Meet the permit requirements of Sections 18.73.120 through 18.73.210 of this chapter and the elevation and anchoring requirements for manufactured homes in Subsection 18.73.260.A.

B. Recreation vehicles placed on sites within Zones V1-30, V, and VE on the community's Flood Insurance Rate Map will meet the requirements of Subsection 18.73.270.A and Section 18.73.300.

18.73.280 – Floodways.

Located within areas of special flood hazard established in Section 18.73.060 are areas designated as floodways. Since the floodway is an extremely hazardous area due to the velocity of flood waters which carry debris, potential projectiles, and erosion potential, the following provisions apply:

A. Prohibit encroachments, including fill, new construction, substantial improvement, and other new development unless certification by a register design professional licensed in the State of California to practice as such is provided demonstrating that encroachments shall not result in any increase in the base flood elevation during the occurrence of the base flood discharge.

B. If Subsection 18.73.280.A is satisfied, all new construction, substantial improvement, and other proposed new development shall comply with all other applicable flood hazard reduction provisions of Sections 18.73.230 through 18.73.300.

18.73.290 – Construction standards for AR Zone areas.

Within areas designated as AR, AR/A1-30, AR/AE, AR/AH, AR/AO, or AR/A, the following standards shall apply:

A. Developed areas. All new construction in areas designated as developed areas shall meet the standards of Section 18.73.230 using the lower of either the AR base flood elevation or the elevation that is three (3) feet above the highest adjacent grade.

B. Areas not designated as developed areas. All new construction in areas that are not designated as developed areas:

1. Where the AR flood depth is equal to or less than five (5) feet above the highest adjacent grade, shall meet the standards of Section 18.73.230 using the lower of either the AR base flood elevation or the elevation that is three (3) feet above the highest adjacent grade.

2. Where the AR flood depth is greater than five (5) feet above the highest adjacent grade, shall meet the standards of Section 18.73.230 using the AR base flood elevation.

C. Dual zone areas.

1. All new construction in areas within zone AR/A1-30, AR/AE, AR/AH, AR/AO, AR/A shall meet the standards of Section 18.73.230 using the higher of either the applicable AR zone

elevation (as determined from Subsection 18.73.290.A or 18.73.290.B above) or the base flood elevation (or flood depth) for the underlying A1-30, AE, AH, AO, or A zone.

2. All substantial improvements to existing construction within zones AR/A1-30, AR/AE, AR/AH, AR/AO, or AR/A shall meet the standards of Section 18.73.230 using the base flood elevation (or flood depth) for the underlying A1-30, AE, AH, AO, or A zone.

18.73.300 – Coastal high hazard area.

Within coastal high hazard areas as established under Section 18.73.060, the following standards shall apply:

A. All new construction and substantial improvement shall be elevated on adequately anchored pilings or columns and securely anchored to such pilings or columns so that the lowest horizontal portion of the structural members of the lowest floor (excluding the pilings or columns) is elevated to or above the base flood level. The pile or column foundation and structure attached thereto is anchored to resist flotation, collapse, and lateral movement due to the effects of wind and water loads acting simultaneously on all building components. Water loading values used shall be those associated with the base flood. Wind loading values used shall be those required by applicable State or local building standards.

B. All new construction and other development shall be located on the landward side of the reach of mean high tide.

C. All new construction and substantial improvement shall have the space below the lowest floor free of obstructions or constructed with breakaway walls as defined in Section 18.73.040. Such enclosed space shall not be used for human habitation and will be usable solely for parking of vehicles, building access or storage.

D. Fill shall not be used for structural support of buildings.

E. Manmade alteration of sand dunes which would increase potential flood damage is prohibited.

F. The Floodplain Administrator shall obtain and maintain the following records:

1. Certification by a registered engineer or architect that a proposed structure complies with Subsection 18.73.300.A; and

2. The elevation (in relation to mean sea level) of the bottom of the lowest structural member of the lowest floor (excluding pilings or columns) of all new and substantially improved structures, and whether such structures contain a basement.

18.73.310 – Nature of variances.

The variance criteria set forth in this chapter are based on the general principle of zoning law that variances pertain to a piece of property and are not personal in nature. A variance may be granted for a parcel of property with physical characteristics so unusual that complying with the requirements of this chapter would create an exceptional hardship to the applicant or the surrounding property owners. The characteristics must be unique to the property and not be shared by adjacent parcels. The unique characteristic must pertain to the land itself, not to the structure, its inhabitants, or the property owners.

It is the duty of the City to help protect its citizens from flooding. This need is so compelling and the implications of the cost of insuring a structure built below flood level are so serious that variances from the flood elevation or from other requirements in this chapter are quite rare. The long-term goal of preventing and reducing flood loss and damage can only be met if variances are strictly limited. Therefore, the variance guidelines provided in this chapter are more detailed and contain multiple

provisions that must be met before a variance can be properly granted. The criteria are designed to screen out those situations in which alternatives other than a variance are more appropriate.

18.73.320 – Variance procedure.

A. The Floodplain Administrator shall hear and decide requests for variances from the requirements of this chapter.

B. In passing upon requests for variances, the Floodplain Administrator shall consider all technical evaluations, all relevant factors, standards specified in other sections of this chapter, and:

1. The danger that materials may be swept onto other lands to the injury of others;

2. The danger to life and property due to flooding;

3. The susceptibility of the proposed facility and its contents to flood damage and the effect of such damage on the existing individual owner and future owners of the property;

4. The importance of the services provided by the proposed facility to the community;

5. The necessity to the facility of a waterfront location, where applicable;

6. The availability of alternative locations for the proposed use which are not subject to flooding damage;

7. The compatibility of the proposed use with existing and anticipated development;

8. The relationship of the proposed use to the comprehensive plan and floodplain management program for that area;

9. The safety of access to the property in times of flood for ordinary and emergency vehicles;

10. The expected heights, velocity, duration, rate of rise, and sediment transport of the flood waters and the effects of wave action, if applicable, expected at the site; and

11. The costs of providing governmental services during and after flood conditions, including maintenance and repair of public utilities and facilities such as sewer, gas, electrical, and water systems, and streets and bridges.

C. Any person aggrieved by the decision of the Floodplain Administrator may, within ten (10) days from the date the aggrieved party is notified in writing of the decision, appeal such decision to the City Council by filing a written notice thereof with the City Clerk. The City Council's decision shall be reduced to writing and shall be served by mail on the aggrieved party within ten (10) days after all evidence has been received by the City Council. The decision of the City Council shall be final.

D. Generally, variances may be used for new construction and substantial improvements to be erected on a lot of one-half (1/2) acre or less in size contiguous to and surrounded by lots with existing structures constructed below the base flood level, providing Items 1 through 11 in Subsection 18.73.320.B and the procedures set forth in Sections 18.73.120 through 18.73.300 have been fully considered. As the lot size increases beyond one-half (1/2) acre, the technical justification required for issuing the variance increases.

E. Upon consideration of the factors of Subsection 18.73.320.B and the purposes of this chapter, the Floodplain Administrator may attach such conditions to the granting of variances as it deems necessary to further the purposes of this chapter.

F. The Floodplain Administrator shall maintain the records of all variance actions, including justification for their issuance, and report any variances issued in its biennial report submitted to the Federal Insurance Administration, Federal Emergency Management Agency.

G. Any applicant to whom a variance is granted shall be given written notice over the signature of the Floodplain Administrator that:

1. The issuance of a variance to construct a structure below the base flood level will result in increased premium rates for flood insurance up to amounts as high as twenty-five dollars ($25.00) for one hundred dollars ($100.00) of insurance coverage, and

2. Such construction below the base flood level increases risks to life and property. A copy of the notice shall be recorded by the Floodplain Administrator in the Office of the Los Angeles County Recorder and shall be recorded in a manner so that it appears in the chain of title of the affected parcel of land.

18.73.330 – Conditions for variances.

A. Variances may be issued for the repair or rehabilitation of "historic structures" (as defined in Section 18.73.040) upon a determination that the proposed repair or rehabilitation will not preclude the structure's continued designation as an historic structure and the variance is the minimum necessary to preserve the historic character and design of the structure.

B. Variances shall not be issued within any mapped regulatory floodway if any increase in flood levels during the base flood discharge would result.

C. Variances shall only be issued upon a determination that the variance is the minimum necessary, considering the flood hazard, to afford relief. "Minimum necessary" means to afford relief with a minimum of deviation from the requirements of this chapter. For example, in the case of variances to an elevation requirement, this means the City Council need not grant permission for the applicant to build at grade, or even to whatever elevation the applicant proposes, but only to that elevation which the City Council believes will provide relief and preserve the integrity of this chapter.

D. Variances shall only be issued upon:

1. A showing of good and sufficient cause;

2. A determination that failure to grant the variance would result in exceptional hardship (as defined in Section 18.73.040) to the applicant; and

3. A determination that the granting of a variance will not result in increased flood heights, additional threats to public safety, extraordinary public expense, create nuisances (as defined in Section 18.73.040—see "Public safety and nuisance"), cause fraud on or victimization (see Section 18.73.040) of the public, or conflict with existing local laws or ordinances.

E. Variances may be issued for new construction, substantial improvement, and other proposed new development necessary for the conduct of a functionally dependent use provided that the provisions of Subsections 18.73.330.A through 18.73.330.D are satisfied and that the structure or other development is protected by methods that minimize flood damages during the base flood and does not result in additional threats to public safety and does not create a public nuisance.

F. Upon consideration of the factors of Section 18.73.320 and the purposes of this chapter, the City Council may attach such conditions to the granting of variances as it deems necessary to further the purposes of this chapter.

Section 18.73.340 – Alternative Compliance.

Work performed in accordance with the California Building Code adopted in Chapter 18.40 or the California Residential Code adopted in Chapter 18.41 of this title shall be deemd to comply with the provisions of this chapter.

When the requirements of this chapter conflict with the requirements of any other part of the California Building Standards Code, Title 24 of the California Codes of Regulation, the most restrictive requirements shall prevail.

CHAPTER 18.74 LOW IMPACT DEVELOPMENT STANDARDS

CHAPTER 18.74
LOW IMPACT DEVELOPMENT STANDARDS

18.74.010 – Purpose.

The purpose of this chapter is to require the use of low impact development (LID) standards in the planning and construction of development projects. LID standards promote the goal of environmental sustainability by helping improve the quality of receiving waters, protecting the Los Angeles and San Gabriel River watersheds, maintaining natural drainage paths, and protecting potable water supplies within the City. The LID objective of controlling and maintaining flow rate is addressed through land development and stormwater management techniques that imitate the natural hydrology (or movement of water) found on the site. Using site design and best management practices that allow for storage and retention, infiltration, filtering, and flowrate adjustments achieve the goals of LID, advances sustainability and reduces the overall cost of stormwater management. The use of engineered systems, structural devices, and vegetated natural designs distributes stormwater and urban runoff across a development site maximizing the effectiveness of LID.

18.74.020 – Definitions.

"Brownfield" means a piece of industrial or commercial property that is abandoned or underused and often environmentally contaminated, especially one considered as a potential site for redevelopment.

"Development" means any constructionto build any new public or private residential projects (whether single-family, multi unit or planned unit development); new industrial, commercial, retail and other non-residential projects, including public agency projects; new impervious surface area; or mass grading for future construction. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety.

"LID Best Management Practices Manual" means a manual of LID standards and practices for stormwater pollution mitigation, including technical feasibility and implementation parameters, alternative compliance for technical infeasibility, as well as other rules, requirements and procedures as the City deems necessary, for implementing the provisions of this section of the Long Beach Municipal Code.

"Multi-Phased Project" shall mean any Development or Redevelopment implemented over more than one phase and the Site of a Multi-Phased Project shall include any land and water area designed and being used to store, treat or manage stormwater runoff in connection with the Development or Redevelopment, including any tracts, lots, or parcels of real property, whether Developed or not, associated with, functionally connected to, or under common ownership or control with such Development or Redevelopment.

"Offsite Runoff Mitigation Fee" means fee paid to the City for the management of storm water runoff generated from the 0.75-inch water quality storm in excess of the storm water runoff that is infiltrated, evapotranspired and/or stored for use. The Offsite Runoff Mitigation Fee shall be used by the City to construct or apply towards the construction of an offsite mitigation project within the same sub-watershed that will achieve at least the same level of water quality protection as if all of the runoff was retained on site.

"Redevelopment" means land-disturbing activities that result in the replacement of more than fifty percent (50%) of an existing building, structure or impervious surface area on an already developed site. It does not include routine maintenance to maintain original line and grade, hydraulic capacity, or original purpose of facility, nor does it include emergency construction activities required to immediately protect public health and safety or grinding/overlaying and replacement of existing parking lots.

"Site" means the land or water area where any "facility or activity" is physically located or conducted,

including adjacent land use in connection with the facility or activity.

18.74.030 – LID requirements and applicability.

A. The provisions of this section set forth the requirements for and shall apply to all new Development and Redevelopment projects in the City of Long Beach. The following Development or Redevelopment projects are exempt from the requirements of this chapter:

1. Any Development or Redevelopment projects that creates, adds or replaces less than five hundred (500) square feet of impervious surface area;

2. Any Development or Redevelopment projects involving emergency construction activities required to immediately protect public health and safety;

3. Any Development or Redevelopment projects involving the grinding/overlaying and replacement of existing parking lots;

4. Any Development or Redevelopment projects where land disturbing activities result in the replacement of fifty percent (50%) or less of an existing building, structure or impervious surface area; or

5. Any Development or Redevelopment projects that are technically infeasible pursuant to Subsection 18.74.040.B; or

6. Any Development or Redevelopment projects that do not require a building permit.

B. LID requirements for new Development or Redevelopment projects:

1. Residential Development of 4 units or less

a. For new Development less than one (1) acre, or if Redevelopment alters more than fifty percent (50%) of existing buildings, structures or impervious surfaces of an existing developed site, comply with the standards and requirements of this chapter and implement at least two (2) adequately sized LID BMP alternatives from the LID Best Management Practices Manual.

b. For new Development that is one (1) acre and greater, the entire Site shall comply with the standards and requirements of this chapter and the LID Best Management Practices Manual.

2. Residential Developments of 5 units or more and nonresidential Developments

For new Development, or if Redevelopment alters more than fifty percent (50%) of existing buildings, structures or impervious surfaces of an existing developed site, the entire Site shall comply with the standards and requirements of this chapter and of the LID Best Management Practices Manual.

3. Nonresidential Developments in the Port of Long Beach Harbor District

For new Development or Redevelopment projects located in the Port of Long Beach Harbor District as designated in Title 21 Zoning Regulations, the site shall comply with the LID BMP alternatives set forth in the Port of Long Beach Post-Construction Design Guidance Manual and in the LID Best Management Practices Manual.

C. This chapter shall not apply to those projects for which a building permit application has been filed for and deemed complete by the Building Official prior to February 19, 2013.

18.74.040 – LID plan review.

A. Compliance with the LID standards of this chapter shall be demonstrated through a LID plan review. Permit applicant shall be required to submit a LID plan for review to the Building Official. The LID plan shall demonstrate how the project will meet the standards and requirements of this chapter and of the LID Best Management Practices Manual. A submitted LID plan shall indicate compliance with the following standards:

1. Stormwater runoff will be infiltrated, captured and reused, evapotranspired, and/or treated onsite through stormwater best management practices allowed in the LID Best Management Practices Manual.

2. The onsite stormwater management techniques must be properly sized, at a minimum, to infiltrate, evapotranspire, and/or store for use without any storm water runoff leaving the site to the maximum extent feasible, for at least the volume of water produced by a storm event that results from:

   a. The volume of runoff produced from a 0.75 inch storm event; or

   b. The eighty-fifth (85^{th}) percentile twenty-four (24) hour runoff event determined as the maximized capture stormwater volume for the area using a fourty-eight (48) to seventy-two (72) hour draw down time, from the formula recommended in Urban Runoff Quality Management, WEF Manual of Practice No. 23/ASCE Manual of Practice No. 87, (1998); or

   c. The volume of annual runoff based on unit basin storage water quality volume, to achieve eighty percent (80%) or more volume treatment by the method recommended in the California Stormwater Best Management Practices Handbook – Industrial/Commercial, (2003).

B. When the onsite LID requirements are technically infeasible, the infeasibility shall be demonstrated in the submitted LID plan and shall be reviewed in consultation with the Building Official. The technical infeasibility may result from conditions that may include, but are not limited to:

1. Locations where seasonal high groundwater is within ten (10) feet of surface grade;

2. Locations within one hundred (100) feet of a groundwater well used for drinking water;

3. Brownfield Development sites or other locations where pollutant mobilization is a documented concern;

4. Locations with potential geotechnical hazards; or

5. Locations with impermeable soil type as indicated in applicable soils and geotechnical reports.

C. If complete onsite compliance of any type is technically infeasible, a Development or Redevelopment project shall be required to comply with, at a minimum, all applicable Standard Urban Stormwater Mitigation Plan (SUSMP) requirements of Chapter 18.61 in order to maximize onsite compliance. For the remaining runoff that cannot feasibly be managed onsite, one or a combination of the following shall be required:

1. An Offsite Runoff Mitigation Fee pursuant to Subsection 18.74.050.B shall be paid to the City of Long Beach's Stormwater Pollution Abatement Fund for offsite mitigation, as described in the LID Best Management Practices Manual. The funding will be applied towards the construction of an offsite mitigation project(s) within the same sub-watershed that will achieve

at least the same level of water quality protection as if all of the runoff was retained onsite.

2. To provide an incentive for onsite management of storm water runoff, Development and Redevelopment projects will receive the following reduction in the Offsite Runoff Mitigation Fee based on the percentages of storm water runoff that is managed on site through infiltration, evapotranspiration, and/or capture and use:

Stormwater Runoff Managed Onsite	Fee Reduction
Between 90% and 99%	75%
Between 75% and 89%	50%
Between 50% and 74%	25%

3. A Multi-Phased Project must design a system acceptable to satisfy these standards and requirements for the entire Site during the first phase and will implement these standards and requirements for each phase of Development or Redevelopment projects of the Site during the first phase or prior to commencement of construction of a later phase, to the extent necessary to treat the stormwater from such later phase.

18.74.050 – LID plan review, permit, and Offsite Runoff Mitigation fees.

A. Permit applicants who seeks to engage in new Development or Redevelopment as defined in this chapter by obtaining a building permit shall pay the required plan examination and permit fees as set forth in Chapter 18.06.

B. Permit applicants who seeks to engage in new Development or Redevelopment as defined in this chapter by obtaining a building permit and does not demonstrate complete onsite compliance as described in the LID Best Management Practices Manual are required to pay an Offsite Runoff Mitigation Fee in the manner and amount as set forth in the schedule of fees and charges established by City Council resolution.

C. Any Development or Redevelopment projects that are exempted from this chapter shall have the option to voluntarily opt in and incorporate into the project the LID requirements of this chapter. In such case, the LID plan review, permit and Offsite Runoff Mitigation fees associated with the project shall be waived.

18.74.060 – Best Management Practices Manual.

A. The Building Official shall prepare, maintain, and update, as deemed necessary and appropriate, the LID Best Management Practices Manual to include LID standards and practices and standards for stormwater pollution mitigation. The LID Best Management Practices Manual shall also include technical feasibility and implementation parameters, alternative compliance for technical infeasibility, as well as other rules, requirements and procedures as the City deems necessary, for implementing the provisions of this chapter.

B. The Building Official shall develop, as deemed necessary and appropriate, in cooperation with other City departments and stakeholders, informational bulletins, training manuals and educational materials to assist in the implementation of the LID requirements.

18.74.070 – Hardship determination.

Whenever there are practical difficulties involved in carrying out the provisions of this chapter, the Director shall have the authority to grant modifications to the provisions of this chapter for individual cases, provided the Director shall first find that special individual reason makes the strict letter of this chapter impractical and the modification is in compliance with the intent and purpose of this chapter and that such modification does not lessen the goals of LID, sustainability or increase the overall cost of stormwater management.

CHAPTER 18.75 GRADING, EXCAVATIONS AND FILLS

CHAPTER 18.75
GRADING, EXCAVATIONS AND FILLS

18.75.010 – General.

A. Scope. The provisions of this chapter apply to grading, excavation and earthwork construction, including fills and embankments. Where conflicts occur between the technical requirements of this chapter and the soils or geotechnical report, the soils or geotechnical report shall govern.

B. Permits required. Except as exempted in Section 18.04.020, no grading shall be performed without first having obtained a permit as required by Section 18.04.010 therefore from the Building Official.

C. Submittal documents. The provisions of Chapter 18.05 shall apply to the submittal of grading construction documents, including soils and geotechnical reports and any other pertinent technical reports where the Building Official determines that the nature of the work applied for is such that a report is necessary.

D. Inspection. Inspections shall be governed by Chapter 18.07.

E. Flood hazard areas. The provisions of this chapter shall not apply to grading, excavation and earthwork construction, including fills and embankments, in floodways within flood hazard areas established in Section 1612.3 of the California Building Code adopted in Chapter 18.40 or in flood hazard areas where design flood elevations are specified but floodways have not been designated, unless it has been demonstrated through hydrologic and hydraulic analyses performed in accordance with standard engineering practice that the proposed work will not result in any increase in the level of the base flood.

F. Consent of adjacent property owner. Whenever any excavation or fill requires entry onto adjacent property for any reason, the permit applicant shall obtain the written consent of the adjacent property owner or the owner's authorized representative, and shall file a copy of said consent with the Building Official before the commencement of such grading work.

In the event contours on adjacent properties are permanently changed, structures or drainage devices are added or modified, and/or the work done requires a grading permit under Section 18.04.010, a separate permit shall be required for each such affected adjoining property in addition to the consent letter. Furthermore, the adjacent property owner shall acknowledge his or her consent on plans showing such work. The consent letter will not be required if such grading permit is taken out by the adjacent property owner.

G. Safety precaution during grading. If at any stage of work on an excavation or fill the Building Official determines that further work as authorized by an existing permit is likely to endanger any property or public way, the Building Official may require as a condition to allow the work to continue that plans for such work be amended to include adequate safety precautions. Safety precautions may include, but shall not be limited to, specifying a flatter exposed slope or construction of additional drainage facilities, berms, terracing, compaction, cribbing, retaining walls or buttress fills, sloughwalls, desilting basins, check dams, benching wire mesh and guniting, rock fences revetment or diversion walls.

No person shall excavate or fill so as to cause falling rocks, soil or debris in any form to fall, roll, slide or flow onto adjoining properties.

18.75.020 – Definitions.

For the purposes of this chapter, the terms, phrases and words listed in this section and their derivatives shall have the indicated meanings.

Bench. A relatively level step excavated into earth material on which fill is to be placed.

Compaction. The densification of a fill by mechanical means.

Cut. See excavation.

Down drain. A device for collecting water from a swale or ditch located on or above a slope, and safely delivering it to an approved drainage facility

Erosion. The wearing away of the ground surface as a result of the movement of wind, water or ice.

Excavation. The removal of earth material by artificial means, also referred to as a cut.

Fill. Deposition of earth materials by artificial means.

Grade. The vertical location of the ground surface.

Grade, existing. The grade prior to grading.

Grade, finished. The grade of the site at the conclusion of all grading efforts.

Grading. An excavation or fill or combination thereof.

Key. A compacted fill placed in a trench excavated in earth material beneath the toe of a slope.

Slope. An inclined surface, the inclination of which is expressed as a ratio of horizontal distance to vertical distance.

Terrace. A relatively level step constructed in the face of a graded slope for drainage and maintenance purposes.

18.75.030 – Grading bonds in hazardous situations required.

The Building Official may require a grading permit surety bond in such form and amounts as may be deemed necessary to assure that the grading work, if not completed in accordance with the approved plans and specifications, will be corrected to eliminate hazardous conditions as determined by the Building Official. The condition of such bond shall be that the permit applicant will perform the work authorized by the grading permit issued pursuant to this title in a good and workmanlike manner and to the satisfaction of the Building Official. When a grading permit surety bond is required, it shall comply with provisions Section 2.84.040 and this chapter.

A. Surety bond. Before a permit is issued for excavation or fill of two hundred and fifty (250) cubic yards (191.3 m^3) or more of earth, the owner of the property shall file with the Building Official a bond for the benefit of the City. The bond shall be executed by the owner and a corporate surety authorized to do business in this state as a surety in an amount sufficient to cover the entire project.

   EXCEPTION: Upon application by the owner, the Building Official may waive this requirement if:

   1. The proposed grading is neither actually nor potentially hazardous;

   2. The grading work performed is in compliance with an order issued by the Building Official; or

   3. The permit applicant can substantiate, to the satisfaction of the Building Official, that the work under a grading permit will be fully executed.

B. Cash bond. In lieu of a surety bond, the owner may file a cash bond with the Building Official on the same terms and conditions and in an amount equal to that which would be required in the surety bond. The deposit may be in the form of negotiable United States securities in lieu of cash.

C. Application of bond to adjacent property. Where grading is required on property adjacent to the grading site under permit in order to complete a project satisfactorily, the owner of such adjacent property need not provide an additional grading bond if the original bond is of sufficient amount to include such additional grading.

D. Conditions of the bond. Every bond shall be conditioned such that the owner shall:

1. Comply with all applicable provisions of this title and all other ordinances of the City or laws and statutes of the State.

2. Comply with all the terms and conditions of the grading permit to the satisfaction of the Building Official.

3. Complete all the work described by the permit, and the plans and specifications relating thereto, within the time limit specified in the permit. Upon application by the permit applicant, the Building Official may, for sufficient cause, extend the time specified in the permit pursuant to Section 18.03.050, but no such extension shall release any surety on the bond.

4. Install temporary erosion control devices when required to do so by the provisions of this chapter.

E. Period and termination of bond. The term of each bond shall begin on the date of filing and shall remain in effect until the work is completed to the satisfaction of the Building Official or until replaced by a new bond in the event of a change of ownership. In the event of failure to complete the work and/or failure to comply with all the conditions and terms of the permit, the Building Official may order some or all of the work to be completed to correct any hazardous conditions. The surety executing such bond, or such deposit, shall continue to be firmly bound under a continuing obligation for the payment of all necessary costs and expenses that may be incurred or expended by the City in causing any and all of such required work to be done and that said surety or the depositor assents to any lawful extension of time within which to construct and complete such work. Such costs shall include an amount equal to the cost to the City of administering the contract and supervising the work required. In the case of a cash bond, the deposit, or any unused portion thereof, shall be refunded to the depositor upon completion of the work to the satisfaction of the Building Official. The Building Official may release or exonerate the bond under appropriate conditions when the public health and welfare is not jeopardized.

F. New ownership. In the event of change of ownership during grading, the new owner shall secure a new grading permit and post a new bond to ensure completion of the grading.

G. Amount of bond. The amount for the bond shall be set at the discretion of the Building Official, considering such factors as the size of the site, the amount of earth material in either excavation or fill, drainage requirements, and other protective devices as needed to secure the safety of the site..

H. Installment refunds. When a substantial portion of the required grading work has been completed to the satisfaction of the Building Official, and when the completion of the remaining grading work, site development or planting is delayed, the Building Official may accept the completed portion of the grading work and consent to the proportionate reduction of the bond to an amount estimated to be adequate to ensure completion of the grading work, site development or planting remaining to be performed. Only one such reduction shall be considered for each bond posted.

I. Entry upon premises. The Building Official, the surety company, or their duly authorized representative, shall have access to the premises described in the permit for the purpose of inspecting the progress of the work.

In the event of default in the performance of any terms or conditions of the permit, the surety or any person employed or engaged in his or her behalf shall have the right to go upon the premises to complete the required work, including the installation of temporary erosion control devices.

Should the permittee or the surety fail to perform the work described by the permit and the plans and specifications relating thereto or required by any applicable law, and it is determined by the Building Official that the public health, safety or general welfare is endangered by such failure, the Building Official may enter upon the premises to perform all or any part of such work, including the installation of temporary erosion control devices.

It shall be unlawful for the owner or any other person to interfere with the ingress and egress from such premises of any authorized representative or agent of any surety company or the City engaged in the work ordered by the Building Official.

18.75.040 – Excavations.

The slope of cut surfaces shall be no steeper than is safe for the intended use, and shall be no steeper than two (2) units horizontal to one (1) unit vertical (50-percent slope) unless the owner or authorized agent furnishes a geotechnical report justifying a steeper slope.

EXCEPTIONS:

1. A cut surface shall be permitted to be at a slope of 1.5 units horizontal to one (1) unit vertical (67-percent slope) provided that all of the following are met:

   a. It is not intended to support structures or surcharges.

   b. It is adequately protected against erosion.

   c. It is no more than eight (8) feet (2438 mm) in height.

   d. Ground water is not encountered.

   e. It is approved by the Building Official.

2. A cut surface in bedrock shall be permitted to be at a slope of one (1) unit horizontal to one (1) unit vertical (100-percent slope).

This section shall not be construed to waive the requirements of the General Safety Orders of the California Department of Industrial Relations, nor the provisions of Section 832 of the California Civil Code concerning the rights of coterminous owners as to excavations.

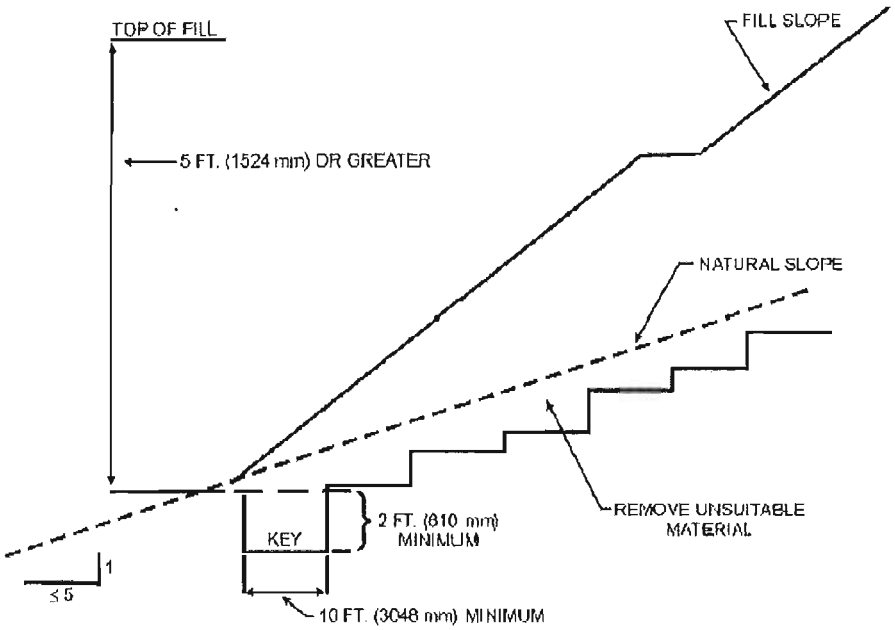
18.75.050 – Fills.

A. General. Unless otherwise recommended in the geotechnical report, fills shall comply with the provisions of this section.

B. Surface preparation. The ground surface shall be prepared to receive fill by removing vegetation, topsoil and other unsuitable materials, and scarifying the ground to provide a bond with the fill material.

C. Benching. Where existing grade is at a slope steeper than five (5) units horizontal to one (1) unit vertical (20-percent slope) and the depth of the fill exceeds five (5) feet (1524 mm) benching shall

be provided in accordance with Figure 18.75.050. A key shall be provided which is at least ten (10) feet (3048 mm) in width and two (2) feet (610 mm) in depth.



For SI: 1 foot = 304.8 mm.

FIGURE 18.75.050
BENCHING DETAILS

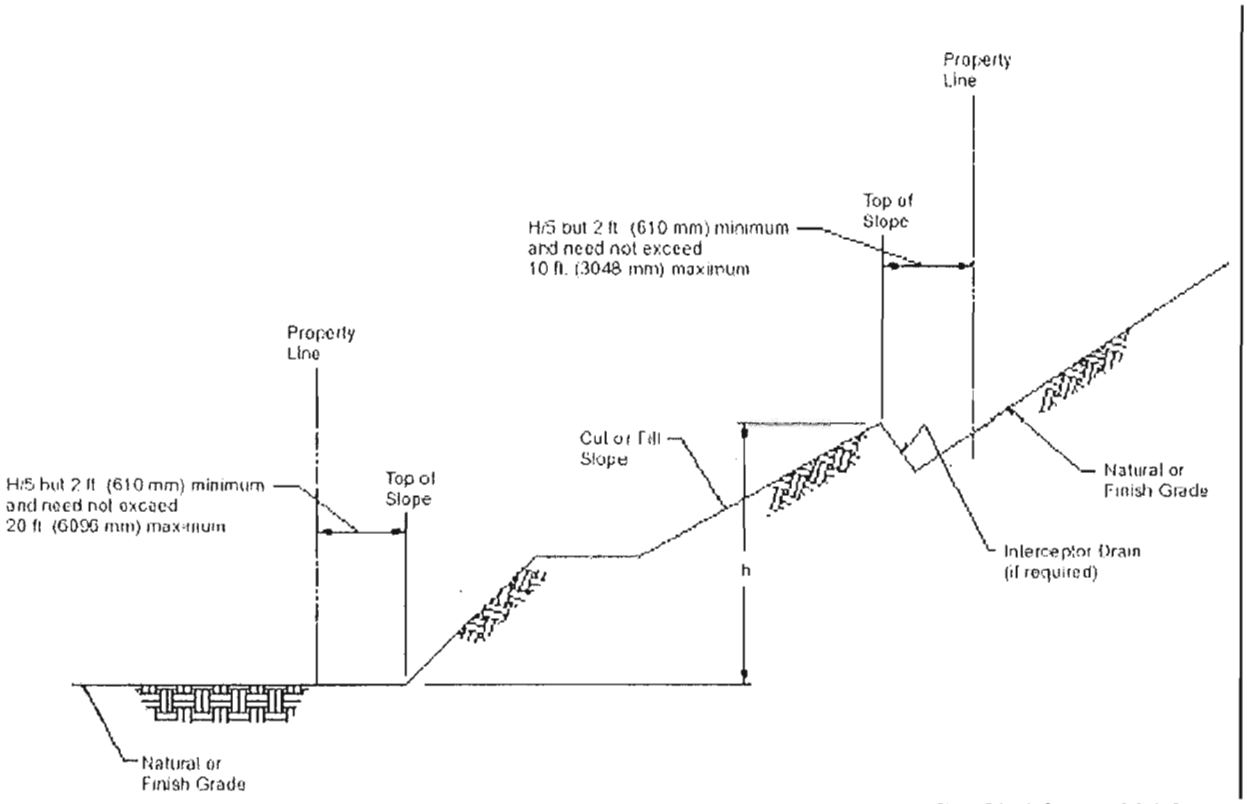
D. Fill material. Fill material shall not include organic, frozen or other deleterious materials. No rock or similar irreducible material greater than twelve (12) inches (305 mm) in any dimension shall be included in fills.

E. Compaction. All fill material shall be compacted to ninety (90) percent of maximum density as determined by ASTM D 1557, Modified Proctor, in lifts not exceeding twelve (12) inches (305 mm) in depth. Where cohesionless soil having less than fifteen (15) percent finer than 0.005 millimeter is used for fill, it shall be compacted to a minimum of ninety-five (95) percent relative compaction based on maximum dry density. Every fill shall be tested for relative compaction by a soil testing agency approved by the Building Official. A compaction report including a Certificate of Compliance setting forth densities so determined shall be submitted to the Building Official before approval of any fill is given.

F. Maximum slope. The slope of fill surfaces shall be no steeper than is safe for the intended use. Fill slopes steeper than two (2) units horizontal to one (1) unit vertical (50-percent slope) shall be justified by a geotechnical report or engineering data.

18.75.060 – Setbacks.

A. General. Cut and fill slopes shall be set back from the property lines in accordance with this section. Setback dimensions shall be measured perpendicular to the property line and shall be as shown in Figure 18.75.060, unless substantiating data is submitted justifying reduced setbacks.



For SI: 1 foot = 304.8 mm.

FIGURE 18.75.060
DRAINAGE DIMENSIONS

B. Top of slope. The setback at the top of a cut slope shall not be less than that shown in Figure 18.75.060, or than is required to accommodate any required interceptor drains, whichever is greater.

C. Slope protection. Where required to protect adjacent properties at the toe of a slope from adverse effects of the grading, additional protection, approved by the Building Official, shall be included. Such protection may include but shall not be limited to:

1. Setbacks greater than those required by Figure 18.75.060.
2. Provisions for retaining walls or similar construction.
3. Erosion protection of the fill slopes.
4. Provisions for the control of surface waters.

18.75.070 – Drainage and terracing.

A. General. Unless otherwise recommended by a registered design professional, drainage facilities and terracing shall be provided in accordance with the requirements of this section.

EXCEPTION: Drainage facilities and terracing need not be provided where the ground slope is not steeper than three (3) unit horizontal to one (1) unit vertical (33percent slope).

B. Terraces. Terraces at least six (6) feet (1829 mm) in width shall be established at not more than thirty (30) foot (9144 mm) vertical intervals on all cut or fill slopes to control surface drainage and debris. Suitable access shall be provided to allow for cleaning and maintenance.

Where more than two (2) terraces are required, one (1) terrace, located at approximately mid-height, shall be at least twelve (12) feet (3658 mm) in width.

Swales or ditches shall be provided on terraces. They shall have a minimum gradient of twenty (20) unit horizontal to one (1) unit vertical (5-percent slope) and shall be paved with concrete not less than three (3) inches (76 mm) in thickness, or with other materials suitable to the application. They shall have a minimum depth of twelve (12) inches (305 mm) and a minimum width of five (5) feet (1524 mm).

A single run of swale or ditch shall not collect runoff from a tributary area exceeding thirteen thousand and five hundred (13,500) square feet (1256 m^2) (projected) without discharging into a down drain.

C. Interceptor drains. Interceptor drains shall be installed along the top of cut slopes receiving drainage from a tributary width greater than forty (40) feet (12 192 mm), measured horizontally. They shall have a minimum depth of one (1) foot (305 mm) and a minimum width of three (3) feet (915 mm). The slope shall be approved by the Building Official, but shall not be less than fifty (50) unit horizontal to one (1) unit vertical (2–percent slope). The drain shall be paved with concrete not less than three (3)inches (76 mm) in thickness, or by other materials suitable to the application. Discharge from the drain shall be accomplished in a manner to prevent erosion and shall be approved by the Building Official.

D. Drainage across property lines. Drainage across property lines shall not be permitted except for drainage that does not exceed that which existed prior to grading. Excess or concentrated drainage shall be contained on site or directed to an approved drainage facility. Erosion of the ground in the area of discharge shall be prevented by installation of nonerosive down drains or other devices.

E. Site drainage. All pads with cut or fill shall slope a minimum of two (2) percent to an approved drainage device or to a public street. Where used, the drainage device shall be an adequately designed system of catch basins and drain lines that conducts the water to a public street.

EXCEPTION: Where the slope of the underlying natural ground does not exceed three (3) percent and the compacted fill is less than three (3) feet (914mm) in depth, the slope of the pad may be reduced to one (1) percent.

F. Drainage around buildings. On all building sites, acceptable drainage devices shall be installed to conduct water around buildings whenever the distance from the building to the top of any slope is less than five (5) feet (1524 mm). Where used, the drainage device shall be an adequately designed system of catch basins and drain lines that conducts the water to a public street.

G. Maintenance of drainage. Drainage in conformance with the provisions of this chapter shall be maintained during and subsequent to construction.

18.75.080 – Erosion control.

A. General. The faces of cut and fill slopes shall be prepared and maintained to control erosion. This control shall be permitted to consist of effective planting.

EXCEPTION: Erosion control measures need not be provided on cut slopes not subject to erosion due to the erosion-resistant character of the materials.

Erosion control for the slopes shall be installed as soon as practicable and prior to calling for final inspection.

B. Other devices. Where necessary, check dams, cribbing, riprap or other devices or methods shall be employed to control erosion and provide safety.

18.75.090 – Referenced standards.

ASTM D1557-e01	Test Method for Laboratory Compaction Characteristics of Soil Using Modified Effort [56,000 ft-lb/ft3 (2,700kn-m/m3)].

CHAPTER 18.76 WATER SUBMETERS

CHAPTER 18.76
WATER SUBMETERS

18.76.010 – Purpose.

The City is reliant on imported water, importing as much as 40% from the Metropolitan Water District. To address the impact of imminent water supply shortage as the result of a statewide, multi-year droughts, critically low levels in key state reservoirs and significant pumping restrictions on imported water supplies from the State Water Project, it is necessary to increase water conservation efforts to ensure sufficient water resources is available for current and future residents of the City. Nearly 36% of water usage in the City can be attributed to multifamily residential or mixed-use buildings where water consumption in each individual dwelling unit is not measured. This chapter encourages water conservation in multifamily residential and mixed-use buildings by requiring the installation of water submeters for individual dwelling units to help building owners to allocate water costs based upon water consumption in the unit and create a financial incentive for residents to conserve water.

18.76.020 – Application.

A. This chapter applies to newly constructed multifamily residential building or newly constructed mixed-use residential and commercial building with three or more dwelling units for which a permit application is submitted on or after July 1, 2014 or as determine otherwise by the Building Official when justifiable cause is demonstrated.

   EXCEPTIONS: Structures in the all of the following categories shall be exempt from this chapter.

   1. Low income or affordable housing pursuant to a recorded regulatory agreement with a governmental agency as determined by the Department of Development Services.

   2. Student dormitories.

   3. Long-term health care facilities as defined in Section 1418 of the California Health and Safety Code.

   4. Time-share property as defined in subdivision (aa) of Section 11212 of the California Business and Professions Code.

   5. Residential care facilities as defined in subdivision (k) of Section 1569.2 of the California Health and Safety Code, or existing buildings.

   6. High-rise buildings if it can be demonstrates to the satisfaction of the Building Official that the building's plumbing configuration incorporates multiple points of entry in each dwelling unit and renders the installation of water submeters infeasible.

B. Nothing herein shall be construed to limit or alter any existing regulations related to testing and oversight of water submeters by the California Department of Food and Agriculture, Division of Measurement Standards.

18.76.030 – Submeter Requirements.

A. Water submeters shall be installed to measure the volume of water supplied to each individual dwelling unit.

B. Water submeters shall be located such that the primary submeter indicator or remote reader may be easily accessed and read by the tenant of the dwelling unit and the owner or owner's authorized agent of the multifamily residential or mixed-use residential and commercial building without entering the dwelling unit.

C. Water submeters shall comply with all laws and regulations governing the approval of submeter types or the installation, maintenance, reading, billing, and testing of submeters, including, but not limited to, the California Plumbing Code adopted in Chapter 18.43.

D. Water submeters shall be of a type approved pursuant to Section 12500.5 of the California Business and Professions Code, and shall be installed and operated in compliance with regulations established pursuant to Section 12107 of the California Business and Professions Code.

CHAPTER 18.99 FINDINGS

18.99.010 – Purpose.

CHAPTER 18.99
FINDINGS

18.99.010 – Purpose.

A. The provisions of this title contain certain changes, deletions, modifications and additions to The 2013 Edition of the California Building Standards Code adopted by the City. Chapters and sections of this title, including the amendments herein, are considered amendments to the California Building Standards Code and Appendices. Some of these changes are administrative in nature in that they do not constitute changes, modifications or additions to the California Building Standards Code.

B. Pursuant to Sections 17958.5 and 17958.7 of the California Health and Safety Code, the City Council has, by resolution made specific findings of fact and determinations relative to the unique climatic, geological or topographical conditions existing in Long Beach that necessitate amendment to the various applicable California Building Standards Code. A copy of said resolution shall be on file with the office of the City Clerk.

AFFIDAVIT OF POSTING

STATE OF CALIFORNIA) ss
COUNTY OF LOS ANGELES)
CITY OF LONG BEACH)

Megan Wiegelman being duly sworn says: That I am employed in the Department of the City Clerk of the City of Long Beach; that on the 15th day of November, 2013, I posted three true and correct copies of Ordinance No. ORD-13-0024 in three conspicuous places in the City of Long Beach, to wit: One of said copies in the entrance lobby of City Hall in front of the Information Desk; one of said copies in the Main Library; and one of said copies in the entrance lobby of the 14th Floor of City Hall.

Subscribed and sworn to before me
this 15th day of November, 2013.

CITY CLERK