

1 [Existing Building Code - Concrete Building Inventory Assessment]

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3 **Ordinance amending the Existing Building Code to assess the City's inventory of**  
 4 **seismically vulnerable Rigid-Wall-Flexible-Diaphragm and Concrete Buildings, and**  
 5 **adopt voluntary seismic retrofit standards for such buildings; adopting findings of**  
 6 **local conditions under the California Health and Safety Code; affirming the Planning**  
 7 **Department's determination under the California Environmental Quality Act; and**  
 8 **directing the Clerk of the Board of Supervisors to forward this Ordinance to the**  
 9 **California Building Standards Commission upon final passage.**

10 NOTE: **Unchanged Code text and uncodified text** are in plain Arial font.  
 11 **Additions to Codes** are in *single-underline italics Times New Roman font*.  
 12 **Deletions to Codes** are in *strikethrough italics Times New Roman font*.  
 13 **Board amendment additions** are in double-underlined Arial font.  
 14 **Board amendment deletions** are in ~~strikethrough Arial font~~.  
 15 **Asterisks (\* \* \* \*)** indicate the omission of unchanged Code  
 16 subsections or parts of tables.

14

15 Be it ordained by the People of the City and County of San Francisco:

16

17 Section 1. General Findings.

18 (a) The Planning Department has determined that the actions contemplated in this  
 19 ordinance comply with the California Environmental Quality Act (California Public Resources  
 20 Code Sections 21000 et seq.). Said determination is on file with the Clerk of the Board of  
 21 Supervisors in File No. \_\_\_\_ and is incorporated herein by reference. The Board affirms this  
 22 determination.

23 (b) On \_\_\_\_\_, the Building Inspection Commission considered this  
 24 ordinance at a duly noticed public hearing pursuant to Charter Section 4.121 and Building  
 25 Code Section 104A.2.11.1.1.

1 (c) San Francisco is located in an area of high seismic activity; earthquakes in the  
2 future. A damaging earthquake of magnitude 6.7 or greater has a 72% chance of occurring in  
3 the Bay Area before 2043, according to the United States Geological Survey (USGS).

4 (d) Older concrete and concrete tilt-up (rigid-wall-flexible-diaphragm) buildings can  
5 experience damage and collapse during large earthquakes, according to San Francisco's  
6 Community Action Plan for Seismic Safety (CAPSS). Older concrete buildings have suffered  
7 catastrophic collapses in recent earthquakes in Mexico City, Christchurch, New Zealand, and  
8 Turkey.

9 (e) Identifying concrete and rigid-wall-flexible-diaphragm buildings is a high priority  
10 recommendation in the Earthquake Safety Implementation Program, San Francisco's 30-year  
11 plan for improving seismic safety. CAPSS estimates that 50% of all structural casualties in a  
12 magnitude 7.2 San Andreas fault earthquake would occur in concrete buildings.

13 (f) The City has developed a preliminary inventory of potential concrete buildings,  
14 which builds on prior versions of an inventory developed by the Concrete Coalition and the  
15 Structural Engineers Association of Northern California. To definitively determine whether a  
16 building is concrete and contains vulnerabilities that put it at higher risk during an earthquake,  
17 a qualified structural engineer needs to assess the building.

18 (g) The City is developing the Concrete Building Safety Program (CBSP) to identify  
19 and address vulnerable concrete buildings in San Francisco, with the following goals: protect  
20 life and public safety, preserve housing and critical uses, protect the economy, preserve City  
21 vitality and character, and speed earthquake recovery.

22 (h) In an April 2024 report entitled "Stakeholder Engagement for the Concrete Building  
23 Safety Program," a working group of internal and external stakeholders advised the City in the  
24 development of the CBSP.

25

1 (i) On April 16, 2024, Mayor Breed issued Executive Directive 24-01, directing the  
2 Office of Resilience and Capital Planning and Department of Building Inspection to draft an  
3 ordinance mandating screening and publishing of retrofit standards in the San Francisco  
4 Existing Building Code.

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6 Section 2. Findings Regarding Local Conditions.

7 (a) California Health and Safety Code Sections 17958.7 and 18941.5 provide that local  
8 jurisdictions may enact more restrictive building standards than those contained in the  
9 California Building Code, provided that the local jurisdictions make express findings that each  
10 change or modification is reasonably necessary because of local climate, geologic, or  
11 topographic conditions and that the local jurisdictions file the local amendments and required  
12 findings with the California Building Standards Commission before the local changes or  
13 modifications can go into effect.

14 (b) The Board of Supervisors hereby finds and declares that the following  
15 amendments to the San Francisco Building Code are reasonably necessary because of local  
16 climatic, topological, and geological conditions as discussed below.

17 (1) The topography of San Francisco creates increased risk of damage from  
18 seismic events due to high density of buildings on very small lots, steep slopes, and high  
19 population density. It is necessary and appropriate to adopt safety measures that assess and  
20 reduce cumulative seismic risk from existing buildings across the City.

21 (2) San Francisco’s geologic conditions produce increased risk for  
22 earthquake-induced ground failure due to local hazardous seismic microzones, slide areas,  
23 and local liquefaction hazards. It is necessary and appropriate to reduce seismic risk and  
24 increase resiliency by assessing the inventory of vulnerable buildings and adopting voluntary  
25 retrofit standards to mitigate seismic risk in existing buildings.

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Section 3. Chapters 3 and 5 and the Appendices to the Existing Building Code are hereby amended by revising Section 304.4 (including Section 304.4.1) and adding Chapter 5G (consisting of Sections 501G.1 and Appendix A, Chapter A6, to read as follows:

**SECTION 304 – STRUCTURAL DESIGN LOADS AND EVALUATION AND DESIGN PROCEDURE**

\* \* \* \*

**304.4 Minimum Lateral Force for Existing Buildings.**

**304.4.1 General.** This section is applicable to existing buildings when invoked by SFEBBC Section 503. This section may be used as a standard for voluntary upgrades.

An existing building or structure which has been brought into compliance with the lateral force resistance requirements of the San Francisco Building Code in effect on or after the dates shown in Table 304.4.1 shall be deemed to comply with this section except when a vertical extension or other alterations are to be made which would increase the mass or reduce the seismic resistance capacity of the building or structure. Where multiple building types apply, the later applicable date shall be used. Where none of the building types apply, compliance shall be at the discretion of the Director. Building type definitions are given in ASCE 41, Table 3-1.

**TABLE 304.4.1 – DATES REQUIRED TO DEMONSTRATE BUILDING COMPLIANCE**

| Building Type | <i>Date of Compliance</i> | <i>Model Code (for reference)</i> |
|---------------|---------------------------|-----------------------------------|
| * * * *       |                           |                                   |

|             |  |                                       |                                 |
|-------------|--|---------------------------------------|---------------------------------|
| 1<br>2<br>3 | Reinforced concrete<br>moment-resisting frame<br>(Type C1) | <del>12/28/1995</del> <u>7/1/1999</u> | UBC <del>1994</del> <u>1997</u> |
| 4<br>5      | Reinforced concrete shear<br>walls (Types C2 & C2a)        | <del>12/28/1995</del> <u>7/1/1999</u> | UBC <del>1994</del> <u>1997</u> |
| 6           | * * * *  |                                       |                                 |

7 \* \* \* \*

8 **CHAPTER 5G: BUILDING INVENTORY ASSESSMENT OF RIGID-WALL-FLEXIBLE-**  
9 **DIAPHRAGM AND OTHER CONCRETE BUILDINGS**

10 **501G.1 Intent.** *This Chapter 5G is intended to advance public safety through a building*  
11 *inventory assessment and notification process regarding the seismic safety risks and retrofit options for*  
12 *Rigid-Wall-Flexible-Diaphragm (“RWFD”) and Concrete Buildings (“CB”) vulnerable to earthquake*  
13 *damage and collapse. The retrofit options for Concrete Buildings are intended to provide voluntary*  
14 *and practical pathways to reduce earthquake-related deaths and injuries and reduce the economic*  
15 *impacts of a damaging earthquake.*

16 **501G.2 Subject Buildings.** *This Chapter’s provisions shall apply to:*

17 *(a) Rigid-Wall-Flexible-Diaphragm buildings where the total footprint area of all RWFD*  
18 *portions is larger than 3,000 square feet, and any RWFD portion was constructed or permitted for*  
19 *construction before July 1, 1999 or designed based on a code adopted or amended before that date and*  
20 *has not been retrofitted pursuant to Appendix A, Chapter A2; and*

21 *(b) Concrete Buildings where (1) vertical elements of concrete construction, such as walls or*  
22 *columns, support gravity load from floors or roofs; and/or (2) vertical elements of concrete*  
23 *construction are part of the lateral-force-resisting system.*

24 *(c) This Chapter refers to any such RWFD or CB as a subject building unless and until it is*  
25 *found to be exempt from the inventory assessment pursuant to Section 501G.3 below. Any building for*

1 which the Department has sent notification or screening instructions referring to this Chapter is also a  
2 subject building until it is found to be exempt.

3 **501G.3 Exemptions for Certain Concrete Buildings. Concrete Buildings for which one or more**  
4 **of the following apply are not subject buildings and will not be included in the building assessment**  
5 **inventory upon submittal and Department approval of a Screening Form as required by Section**  
6 **502G.1:**

7 (a) **Age.** The building complies with Section 304.4.1.

8 (b) **One-story.** The building has no more than one story above grade plane, as defined in  
9 San Francisco Building Code Chapter 2, excluding mezzanines.

10 (c) **Two-story.** The building conforms to all the following:

11 • The building has no more than two stories above grade plane, excluding  
12 mezzanines;

13 • The building does not include concrete columns or wall piers, as defined in  
14 Section 501G.2; and

15 • The building includes a structural reinforced concrete diaphragm at the second  
16 floor, the roof, or both.

17 (d) **Complete steel frame.** Steel columns support all the gravity floor load and roof load,  
18 and steel columns are connected to steel beams.

19 (e) **Concrete used only for floors, roofs, foundations, or basements.** All concrete elements  
20 that define the building as a subject building extend less than four feet above adjacent grade.

21 (f) **Previous retrofit.** There is building permit documentation that the building has been  
22 seismically retrofitted to meet one of the following:

23 • Section 304.3 of the 2022 SFEBBC

24 • Section 303.4 of the 2019 SFEBBC

25 • Section 301.2 of the 2016 SFEBBC

1 • Section 3401.10 of the 2013 SFBC

2 • Section 3401.8 of the 2010 SFBC

3 • Section 3403.5 of the 2007 SFBC

4 (g) **One- and two-family dwellings.** The building conforms to all the following:

5 • The building contains no more than two dwelling units.

6 • The building contains only Group R 3 occupancy and incidental Group U occupancy.

7 (h) **Light -frame over one-story concrete podium.** The building conforms to all the  
8 following:

9 • All concrete elements that define the building as a subject building extend no more than  
10 one story above grade plane.

11 • All stories above the concrete story consist of light-frame (wood or cold-formed steel)  
12 construction.

13 **502G – Screening Process.** The Department shall develop a screening process that notifies  
14 owners of potential subject buildings, provide them with a Screening Form to see if any exemptions  
15 apply, and educates them about the voluntary retrofit pathways available to reduce seismic  
16 vulnerability.

17 **502G.1 Screening Form.** Within six months of the effective date of the ordinance in Board File  
18 No. 250211 enacting Chapter 5G, the Department shall draft and issue Screening Forms to potential  
19 owners that outline the applicable exemptions, identify the information necessary to confirm whether  
20 an exemption applies, and set an 18-month deadline to submit the completed Screening Form.

21 **502G.2 Concrete Building Website.** The Department shall maintain a webpage providing  
22 information about the screening process, the status of subject buildings, and links to voluntary retrofit  
23 pathways.

24  
25 **APPENDIX A**

1 **SEISMIC RETROFIT PROGRAM FOR CONCRETE BUILDINGS**

2 **CHAPTER A6**

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4 **A6.1 Intent.** This Chapter A6 is intended to advance public safety and improve the ability of the  
5 City to recover from a major earthquake, by reducing the likelihood of collapse of certain concrete  
6 buildings. In furtherance of this purpose, this Chapter establishes voluntary seismic retrofit  
7 requirements intended to reduce the collapse risk of the most vulnerable Concrete Buildings (CB. It is  
8 the present intent of the Board of Supervisors that, absent a compelling public safety necessity,  
9 buildings retrofitted pursuant to this Appendix A, Chapter A6 or Chapter 304.4 will not be subject to  
10 future mandatory seismic retrofitting legislation adopted by the Board.

11 **A6.2 Definitions**

12 In addition to the definitions in San Francisco Building Code Chapter 2 and San Francisco  
13 Existing Building Code Chapter 2, the following shall apply for purposes of this Chapter A6:

14 **Wall pier.** A vertical wall segment within a structural wall, bounded horizontally by two  
15 openings or by an opening and an edge, with ratio of horizontal length to wall thickness less than or  
16 equal to 6.0, and ratio of clear height to horizontal length greater than 2.0.

17 **A6.3 Design Professionals.** All work intended to comply with this Chapter shall be performed  
18 by appropriately licensed individuals, and all documents submitted for compliance shall be sealed by a  
19 California licensed civil or structural engineer.

20 **A6.4 Structural engineering criteria**

21 **A6.4.1 Engineering criteria.** Each subject building that is required to comply by evaluation or  
22 retrofit shall satisfy one of the Engineering Criteria Options per Table A6.4.1.

23 **Table A6.4.1: Engineering Criteria Options**

|                          |  |
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| <u><b>Option (a)</b></u> | <u>Comply with all of the following:</u> |
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|                          | <p><u>1. ASCE 41 with a performance objective of Structural Collapse Prevention (S-5) with the BSE-1E earthquake hazard level.</u></p> <p><u>2. For each seismic deficiency in Table A6.4.2, demonstrate that the deficiency is not present, or address it by retrofitting. In a bulletin, the Department shall specify requirements for identifying, evaluating, and retrofitting the seismic deficiencies listed in Table A6.4.2.</u></p> <p><u>3. For all unreinforced masonry elements, ASCE 41 with a performance objective of Nonstructural Life Safety (N C) with the BSE-1E earthquake hazard level.</u></p> |
| <p><u>Option (b)</u></p> | <p><u>Comply with all of the following:</u></p> <p><u>1. ASCE 41 with a performance objective of Structural Collapse Prevention (S-5) with the BSE-2E earthquake hazard level. The BSE-1E earthquake hazard level need not be evaluated, regardless of the Tier of evaluation.</u></p> <p><u>2. For all unreinforced masonry elements, ASCE 41 with a performance objective of Nonstructural Life Safety (N C) with the BSE-1E earthquake hazard level.</u></p>  |

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2 **A6.4.2 Nonstructural components.** For either Engineering Criteria Option, unreinforced  
3 masonry shall be removed or retrofitted to satisfy Non-structural Life Safety performance at the BSE-  
4 IE level.

5 **A6.4.3 Building separation.** Where buildings abut adjacent properties, building separation  
6 limitations (e.g. Section 7.2.13 of ASCE 41) need not be considered. For separation joints within the  
7 same property, the potential for pounding at the separation joints shall be considered in seismic  
8 evaluation and retrofit design.

9 **A6.4.4 Liquefaction or landslide risk.** If the building is located in a zone of high or very high  
10 risk of soil liquefaction or landslide, as indicated by the State of California Seismic Hazard Zones Map  
11 for San Francisco, the Owner's Engineer shall so notify the Owner in writing and provide the owner  
12 with their professional opinion on voluntary measures or additional investigations that could be taken  
13 to address the risk. Otherwise, soil liquefaction, lateral spreading, and landslide need not be addressed  
14 in the seismic evaluation or retrofit design. This Chapter does not exempt the building from the  
15 requirements of the Slope and Seismic Hazard Zone Protection Act (San Francisco Building Code  
16 106A.4.1.4) where applicable.

17 **A6.4.5 Other retrofit triggers.** If the project involves a Substantial Structural Alteration as  
18 defined in Section 503.11 or Non-structural Alteration as defined in Section 503.11.1, the building shall  
19 meet the more restrictive of the provisions of this Chapter or those of Section 304.4 (Minimum lateral  
20 force for existing buildings).

21 **A6.4.6 Masonry Infill.** For subject buildings with masonry infill, the seismic evaluation and  
22 retrofitting shall account for the effect of the infill considering ASCE 41 requirements, and for Tier 2  
23 and Tier 3 evaluations shall consider:

- 24 • The peak strength that the infill can achieve.
- 25 • The potential for strength degradation of the infill.

1 • The potential for a weak story or story concentration of deformation, because of the  
2 locations of infill in the building, or because of potential concentrations of damage to infill.

3 • Plan torsion effects because of the location of infill in the building, or because of  
4 potential concentrations of damage to infill.

5 **Table A6.4.2: Seismic deficiencies to be addressed by Engineering Criteria Option (a)**

6 **Weak story:** The structure includes one or more stories having lateral strength less than the  
7 story above.

8 **Lateral-force-resisting-element irregularity:** The lateral force-resisting system includes one  
9 or more concrete walls or frames that are not continuous to the foundation.

10 **Non-ductile moment frame:** The main lateral-force-resisting-system includes concrete  
11 moment frames that do not satisfy strong-column-weak-beam requirements or that have shear-  
12 governed columns or beams.

13 **Shear-governed concrete column or wall pier:** The structure includes one or more concrete  
14 columns or wall piers that are shear-governed and susceptible to failure resulting in loss of gravity  
15 load support.

16 **Punching shear in concrete slab:** One or more concrete floor or roof slabs are supported by  
17 one or more columns without beams framing into the column and is susceptible to loss of gravity  
18 load support following punching shear failure.

19 **Weak connection of concrete wall to flexible diaphragm:** The structure includes one or  
20 more concrete walls connected to one or more flexible diaphragms, where the wall is not adequately  
21 anchored to the diaphragm.

22 **Inadequate length of bearing connection:** One or more concrete beams or slabs are  
23 supported by a bearing connection with short bearing length.

1           Section 4. Effective Date. This ordinance shall become effective 30 days after  
2 enactment. Enactment occurs when the Mayor signs the ordinance, the Mayor returns the  
3 ordinance unsigned or does not sign the ordinance within ten days of receiving it, or the Board  
4 of Supervisors overrides the Mayor’s veto of the ordinance.

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6           Section 5. Scope of Ordinance. In enacting this ordinance, the Board of Supervisors  
7 intends to amend only those words, phrases, paragraphs, subsections, sections, articles,  
8 numbers, punctuation marks, charts, diagrams, or any other constituent parts of the Municipal  
9 Code that are explicitly shown in this ordinance as additions, deletions, Board amendment  
10 additions, and Board amendment deletions in accordance with the “Note” that appears under  
11 the official title of the ordinance.

12  
13           Section 6. Directions to Clerk. Upon final passage of this ordinance, the Clerk of the  
14 Board of Supervisors is hereby directed to transmit this ordinance to the California Building  
15 Standards Commission pursuant to the applicable provisions of State law.

16  
17 APPROVED AS TO FORM:  
18 DAVID CHIU, City Attorney

19 By:     /s/ Robb Kapla      
20       ROBB KAPLA  
21       Deputy City Attorney

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