

**BUILDING STANDARDS ADMINISTRATIVE CODE
(Part 1, Title 24, C.C.R.)**

**ADMINISTRATIVE REGULATIONS FOR THE
OFFICE OF STATEWIDE HEALTH PLANNING AND DEVELOPMENT (OSHPD)**

**CHAPTER 6. SEISMIC EVALUATION PROCEDURES
FOR HOSPITAL BUILDINGS**

Article 1. Definitions and Requirements

Text a, Text aa: Indicates proposed SB 90 regulatory amendments to existing CAC language.
Text b, Text bb: Indicates changes to proposed SB 90 regulatory amendments made on 9/6/11.
Text c, Text cc: Indicates changes to proposed SB 90 regulatory amendments made based on Public comments 9/7/11.

1.0 Scope. The regulations in this article shall apply to the administrative procedures necessary to implement the seismic retrofit requirements of the Alfred E. Alquist Hospital Facilities Seismic Safety Act of 1983.

1.1 Application. The regulations shall apply to all general acute care hospital facilities as defined in Section 1.2 of these regulations.

1.2 Definitions. Unless otherwise stated, the words and phrases defined in this section shall have the meaning stated therein throughout Chapter 6, Part 1, Title 24.

Alternative Analysis means a complete seismic analysis using methodology approved in advance by the Office and meeting the criteria of Article 2, Section 2.7 of these regulations.

Bulk Medical Gas System means an assembly of fixed equipment such as storage containers, pressure regulators, pressure relief devices, vaporizers, manifolds, and interconnecting piping that has a capacity of more than 20,000 cubic feet (NTP) of cryogenic medical gas.

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Administrative Extension means an extension not to exceed 2 years granted while the hospital's application for an extension pursuant to Section 1.5.2 Item 8 is being reviewed by the Office.

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Critical Community Provider means hospitals determined to be critical to community access to healthcare, as determined in Section 1.5.2 Item 8.6.

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Maximum permitted extension is a modified Risk-Based Extension for a building of up to a total extension of 7 years, based on consideration of community access to essential hospital services and financial hardship.

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Risk-Based Extension is the unmodified extension for a building, based on consideration of structural integrity and occupancy.

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Patient origin region is a geographic area bounded by the same US Postal Service five digit ZIP Code. For the purposes of determining the hospital service area the patient origin region may be referred to as region.

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Region see definition for "Patient origin region".

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1.4.5.1 Change in Seismic Performance Category. The SPC or NPC for a hospital building may be changed by the Office from the initial determination in Sections 1.3.3 or 1.3.4 provided the building has been modified to comply with the requirements of Chapter 34A, Part 2 of Title 24 for the specified SPC or NPC.

The SPC of a hospital building may also be changed by the Office on the basis of collapse probability assessments in accordance with Section 1.4.5.1.2.

1.4.5.1.1 – The SPC or NPC for a hospital building may be changed by the Office from the initial determination made per Sections 2.0.1.2.3 or 11.0.1.2.1 upon the following:

1. A Seismic Evaluation Report shall be submitted and approved which shall include either or both of the following:
 - 1.1 A structural evaluation report in accordance with Section 1.3.3;
 - 1.2 A nonstructural evaluation report in accordance with Section 1.3.4.

Exception: To change an NPC 1 hospital building to an NPC 2 under this section, the nonstructural evaluation may be limited in scope to the systems and equipment specified in Section 11.2.1.

2. The building has been modified to comply with the requirements of Chapter 34A, Part 2 of Title 24 for the specified SPC or NPC.

1.4.5.1.2 Hospital buildings with an SPC 1 rating, may be reclassified to SPC 2 by the Office, pursuant to Table 2.5.3, on the basis of a collapse probability assessment **per Section 1.4.5.1.2 Item 1** provided the hospital buildings received an extension to the January 1, 2008, compliance deadline in accordance with Section 1.5.2.

EXCEPTION: Hospital buildings with the following deficiencies are not eligible for **evaluation** reclassification:

- a) The potential for surface fault rupture and surface displacement at the building site is present (Section 9.3.3).
- ~~b) Buildings with unreinforced masonry bearing wall construction (Section 5.4).~~

Existing language in Section 1.4.5.1.2.2 relocated in this Section and amended

1. Hospital buildings with SPC 1 rating may be reclassified as follows:

- (a) The Office shall issue a written notice to the hospital owners informing them that they may be eligible for reclassification of their SPC 1 buildings as permitted by this Section.
- (b) For an SPC-1 building to be considered for reclassification to the SPC-2 rating, the hospital owner shall request a collapse probability assessment. The request shall include at a minimum the information and documents specified in Section 1.8.

Relocate Section 1.4.5.1.2.1 and Section 1.4.5.1.2.2 under new Section 1.8

~~1.4.5.1.2.1~~ The collapse probability assessment by the Office shall be determined using the following:

~~1. Multi-Hazard Loss Estimation Methodology, Earthquake Module (HAZUS-MH MR 2) developed by the Federal Emergency Management Agency (FEMA) / National Institute of Building Sciences (NIBS).~~

~~2. Building specific input parameters required by the Advanced Engineering Building Module (AEBM) of the HAZUS methodology, shall be obtained from the Appendix H to Chapter 6.~~

~~3. Modifications by the Office to the AEBM input parameters are hereby adopted as shown in the Appendix H to Chapter 6, which are based on the following:~~

- ~~a) Building type~~
- ~~b) Building height and number of stories~~
- ~~c) Building age~~
- ~~d) Significant Structural Deficiencies listed in Section 1.4.5.1.2.2.2.~~

~~4. Site seismicity parameters adjusted for soil type, as determined by the Office, shall be the lesser of:~~

- ~~a) Deterministic ground motion due to the maximum magnitude earthquake event on the controlling fault system.~~
- ~~b) Probabilistic ground motion having 10% probability of being exceeded in 50 years.~~

1.4.5.1.2.2 Hospital buildings with SPC 1 rating may be reclassified as follows:

~~1. The Office shall issue a written notice to the hospital owners informing them that they may be eligible for reclassification of their SPC 1 buildings as permitted by Section~~

1.4.5.1.2.

2. For a building to be considered for reclassification, the hospital owner shall submit the following by January 1, 2012:

2.1 A complete seismic evaluation of the building pursuant to Section 1.3.3.

EXCEPTION: Hospital owners who had submitted a complete structural evaluation report in compliance with Section 1.3.3, that is deemed to be complete by the Office, need not resubmit.

2.2 A supplemental evaluation report prepared by a California registered structural engineer that identifies the existence or absence of the building structural Lateral Force Resisting System (LFRS) properties and Significant Structural Deficiencies listed below:

a. Age: Year of the California Building Code (CBC) used for the original building design.

——— **EXCEPTION:** For pre 1933 buildings, the design year shall be reported.

b. Materials Tests: Office approved materials test results based on test plan pre-approved by the Office (Section 2.1.2).

c. Load path (Section 3.1)

d. Mass irregularity (Section 3.3.4).

e. Vertical discontinuity (Section 3.3.5),

f. Short captive column (Section 3.6).

g. Material deterioration (Section 3.7).

h. Weak columns (Sections 4.2.8 & 4.3.6).

i. Wall anchorage (Section 8.2).

j. Redundancy (Section 3.2).

k. Weak story irregularity (Section 3.3.1).

l. Soft story irregularity (Section 3.3.2).

m. Torsional irregularity (Section 3.3.6).

n. Deflection incompatibility (Section 3.5).

o. Cripple walls (Section 5.6.4).

~~p. Openings (in Diaphragm) at shear walls (Section 7.1.4).~~

~~q. Topping slab missing (Sections 7.3 & 7.4) or the building type (structural system) is of lift slab construction.~~

~~This supplemental evaluation report shall include supporting documentation relating to the existence or absence of the Significant Structural Deficiencies listed above including calculations, where required, for review and acceptance by the Office, unless they are included in the complete structural evaluation.~~

~~2.3 Building systems shall be classified as to their Model Building Type per Table 1.4.5.1. For buildings with multiple building types, all types shall be listed. The building type resulting in the maximum collapse probability will be utilized by the Office to determine eligibility for reclassification.~~

Table 1.4.5.1: Model Building Type

Model Building Type (MBT)	Description
W1	Wood, Light Frame (≤ 5,000 sq. ft.)
W2	Wood, Greater than 5,000 sq.ft.
S1	Steel Moment Frame
S2	Steel Braced Frame
S3	Steel Light Frame
S4	Steel Frame with Cast-In Place Concrete Shear Walls
S5	Steel Frame with Un-reinforced Masonry Infill Walls
C1	Concrete Moment Frame
C2	Concrete Shear Walls
C3	Concrete Frame with Un-reinforced Masonry Infill Walls
PC1	Pre-cast Concrete Tilt-Up Walls
PC2	Precast Concrete Frames with Concrete Shear Walls
RM1	Reinforced-masonry Bearing Walls with Wood or Metal Deck Diaphragms
RM2	Reinforced-masonry Bearing Walls with Concrete Diaphragms
URM	Unreinforced masonry Bearing Walls
MH	Manufactured Housing

~~2.4 Building height and number of stories above and below the seismic base shall be specified.~~

1.4.5.1.2.3 1.4.5.1.2.1 Upon assessment of the collapse probability of the SPC-1 building, the Office shall notify the hospital owner in writing the final SPC rating of the subject building.

Every building with collapse probability more than 0.75%, but less than or equal to 1.20%, shall be altered, repaired, or seismically retrofitted to mitigate any deficiencies identified in accordance with Article 10 Sections 10.1.1.1, 10.1.2.2, 10.1.6, and 10.1.7 of this Chapter (as part of the complete seismic evaluation in accordance with Section 1.3.3) by January 1, 2015. Hospitals not meeting the deadline set by this section shall not be issued building permit for any noncompliant building except those required for seismic compliance in accordance with the California Administrative Code (Chapter 6), maintenance, and emergency repairs until the

building permit required by this section is issued.

1.4.5.1.2.4 1.4.5.1.2.2 When the collapse probability assessment by the Office results in the building remaining in SPC 1, further evaluation may be provided by the hospital owner in accordance with Section 2.7 in order to substantiate a higher SPC rating.

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1.5.2 Delay in Compliance

1. The Office may grant the hospital owner an extension to the January 1, 2008 seismic compliance deadline for both structural and nonstructural requirements if compliance will result in diminished health care capacity which cannot be provided by other general acute care hospitals within a reasonable proximity.

1.1 Hospital owners requesting an extension in accordance with Section 1.5.2 must submit an application form to the Office by January 1, 2007. The application form shall be accompanied by a statement explaining why the hospital is seeking the extension to the January 1, 2008 seismic compliance deadline. The statement shall include, at a minimum, the following information:

- (a) The length/duration of the extension request;
- (b) The hospital buildings requiring an extension; and
- (c) The acute care services that will be completely or partially unavailable if the extension is denied.

1.2 The hospital owner shall request an extension for seismic compliance in one year increments, up to a maximum of five (5) years, beyond the mandated year of compliance. The hospital owner shall also submit an amended compliance plan and schedule in accordance with Section 1.4.5 indicating when compliance will be obtained.

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8. Any SPC-1 general acute care hospital building that has received an extension to the January 1, 2008 deadline for both the structural and nonstructural requirements may receive an additional extension of up to 7 years to the January 1, 2013 deadline for both the structural and nonstructural requirements.

8.1 For an SPC-1 building to be eligible for this extension, all of the following conditions must be met:

- (a) The hospital owner requesting an extension for an SPC-1 building in accordance with this Section, must submit to the Office no later than March 31, 2012 the following:**
 - (i) An application for extension accompanied by a letter of intent stating whether the hospital intends to rebuild, replace, or retrofit the building, or remove all general acute care beds and services from the building.**

- (ii) A facility site plan identifying the SPC-1 hospital building for which the extension is being requested by name and OSHPD assigned building number.
- (iii) A chart or a bar graph schedule which describes the necessary amount of time and schedule to complete the construction for the subject building in order to achieve the targeted building resolution stipulated in the letter of intent pursuant to Section 1.5.2 Item 8.1(a)(i). The chart shall indicate all major milestones required for the implementation of the construction plan.
- (iv) A narrative description and supporting documentation demonstrating of how the hospital intends to meet the requested deadline, and why the requested extension is necessary.
- (v) A narrative description and supporting documentation demonstrating community access to essential hospital services as specified in Section 1.5.2 Item 8.6.
- (vi) A narrative description and supporting documentation demonstrating the hospital owner's financial capacity to meet the milestones specified in Section 1.5.2 Items 8.7.
- (vii) Information on the type of use/occupancy of the SPC-1 building by listing the following:
 - A. Building area as defined in Section 502, Chapter 5, Part 12, California Building Code.
 - B. Type of services currently delivered in the building.

(b) The hospital owner submits to the office, no later than September 30, 2012 an application and required documents ready for review seeking collapse probability assessment for its SPC-1 building in accordance with Section 1.8.2.

(c) The hospital owner submits to the office, no later than January 1, 2015, construction documents ready for review consistent with the letter of intent submitted pursuant to Section 1.5.2 Items 8.1(a)(iii). The construction documents shall be accompanied by a financial report prepared in accordance with Section 1.5.2 Item 8.8.

(d) The hospital owner receives a building permit consistent with the letter of intent and the schedule submitted pursuant to Section 1.5.2 Items 8.1(a)(iii) no later than July 1, 2018.

8.2. A hospital may demonstrate that it has complied with the requirements of their compliance schedule if they received confirmation of compliance from the Office by the end of their extension date.

8.3 Determination of eligibility. A hospital may be eligible for an extension based on consideration of the factors described in Section 1.5.2 Item 8.4. These factors shall be considered together to determine the extension. In no case shall the extension be longer than that required to complete the implementation plan and schedule described in Section 1.5.2 Item 8.1(a)(iii) and (iv).

8.4. Compliance extensions.

8.4.1 Extensions to the January 1, 2013 compliance deadline shall be determined as follows:

- (a) Critical Community Providers. A building at a hospital defined as a Critical Community Provider in accordance with Section 1.5.2 Item 8.6 is eligible for a Maximum Permitted Extension of up to 7 years.
- (b) Financial Hardship A building at a hospital not defined as a Critical Community Provider that meets the financial hardship criteria of Section 1.5.2 Item 8.7 is eligible for a Maximum Permitted Extension of up to 7 years.
- (c) All other hospitals. A building at a hospital that does not meet the criteria of Sections 1.5.2 Item 8.4.1(a) or 8.4.1(b) is eligible for the Risk-Based Extension as determined in Section 1.5.2. Item 8.5.

8.4.2 Upon acceptance of the application for extension and all submittal documentation required in 8.1 (a) an SPC-1 building may be granted an administrative extension by the Office.

8.5. Risk-Based Extension. The risk-based extension is based on the seismic risk coefficient.

(a) The seismic risk coefficient posed by a building, P , shall be determined by:

$$P = H \times E$$

Where:

H = the value of the collapse probability in percent, as determined by the requirements of Section 1.8; and,

E = the Exposure Factor, based on the presence of Basic and Supplemental Services, as defined in Part 2, Title 24, Section 1224.3.

The Exposure Factor E shall be taken as:

$E = 0.5$ where the building houses only storage spaces, central sterile supply spaces, and/or utility plant spaces.

$E = 0.7$ where the building houses only clinical laboratory, pharmaceutical, dietetic, and/or support services spaces, or nonpatient care building which is contiguous to and provides egress or structural support to an acute care hospital building(s)

$E = 1.0$ where the building houses any other Basic and/or Supplementary Service spaces.

Where a building contains more than one Basic and/or Supplementary Service space, the largest value of E shall apply.

(b) The Risk-Based Extension is determined by the seismic risk coefficient, P :

- i. Where $P \leq 3.0\%$, the Risk-Based Extension for the building shall not exceed 7 years.
- ii. Where $P > 3.0\%$ but $P \leq 5.0\%$, the Risk-Based Extension for the building shall not exceed 5 years.
- iii. Where $P > 5.0\%$, the Risk-Based Extension for the building shall not exceed 2 years.
- iv. Regardless of the seismic coefficient, P , the Risk-Based Extension for any building straddling an Active Fault shall not exceed 2 years.

8.6 Community access to essential hospital services. The potential effect of closure of the hospital building on community access to essential hospital services shall be evaluated. The hospital may be classified as a Critical Community Provider if it meets the requirements of Section 1.5.2 Items 8.6(a), 8.6(b), 8.6(c), or 8.6(d) or 8.6(d):

~~(a) The hospital is certified as a Sole Community Hospital, Critical Access Hospital, and/or Rural Referral Center by the Department of Health and Human Service, Centers for Medicare & Medicaid Services~~

(a) The hospital meets the requirements of (i) or (ii) below:

- i. Certified as a Sole Community Hospital, Critical Access Hospital, or Rural Referral Center by the Department of Health and Human Service Centers for Medicare & Medicaid Services.
- ii. Disproportionate Share Hospital. For purposes of this section a hospital is deemed to be a disproportionate share hospital if it meets the eligibility requirements of the Welfare and Institutions Code, Section 14105.98 for at least 2 years during the five most current years prior to application for an extension.

(b) The hospital provides care for uninsured/underinsured populations. To qualify, the hospital must meet or exceed all of the following minimum thresholds:

- i. 10% Medicaid Discharges
- ~~ii. 10% Uninsured Discharges~~
- ii. 10% Medicaid Emergency Department visits
- iii. 10% Uninsured Emergency Department visits
- iv. Inpatient Occupancy rate of the hospital general acute licensed beds greater than 50%

(c) The hospital is a critical service provider of any of the following specialized medical care within its service area as defined in Section 1.5.2 Item 8.6(e)(f):

- (i) Trauma Center as defined by CCR – Title 22, Division 9, Section 100248.
- (ii) Children’s Hospital as defined by the Welfare and Institutions Code, Section 10727.
- (iii) Burn Unit as defined by CCR – Title 22, Division 5, Section 70421.
- (iv) Emergency department provides 10% or more of the total Emergency Treatment Beds Stations. For purposes of determining this number, emergency treatment bed or an emergency treatment station is a specific place within the emergency department adequate to treat one patient at a time excluding holding or observation beds

~~(v) A tertiary or specialty hospital dedicated to specific sub-specialty care with volumes in excess of 50% of total annual discharges within the county in which the hospital is located.~~

(v) A hospital in which its service area has an average number of patient beds/1000 population below 1.5.

(d) The hospital provides more than 20 percent of the licensed acute care beds in the hospital's service area as defined in Section 1.5.2 Item 8.6(e)(f).

~~(e) A tertiary or specialty hospital dedicated to specific sub-specialty care with volumes in excess of 50% of total annual discharges within the county in which the hospital is located~~

(f) ~~(e)~~ Hospital Service Area. The total geographic area comprised by the sum of all patient origin regions that significantly contribute to the inpatient population of the subject hospital. For the purposes of determining the hospital service area, conditions (i) and (ii) listed below shall be satisfied:

(i) The number of regions considered shall include all the regions with a relative hospital ratio of inpatient discharges per region greater than ~~45%~~ of the total hospital inpatient discharges. "Relative hospital ratio of inpatient discharges per region" means the number of hospital patients discharged in a region by the subject hospital in relation to the total hospital patients discharged for the same region by all hospitals.

(ii) The number of regions considered shall include all the regions with a hospital ratio of inpatient discharges per region that cumulatively account for at least ~~99.70%~~ of the total hospital patient discharges. "Hospital ratio of inpatient discharges per region" means the number of hospital patients discharged in a region by the subject hospital in relation to the total patients discharged by the subject hospital.

The data utilized to determine community access to essential hospital services shall be based on the hospital's most current fiscal reporting information filed with the Office or on the hospital's fiscal reporting information filled with the Office for any of the most current three years.

8.7 Financial Hardship. Evaluation of financial hardship shall be determined on a hospital-by-hospital basis. A hospital may be determined to have financial hardship if it meets at least one of the following requirements:

(a) Financial performance. The hospital meets all of the following thresholds:

i. ~~Negative operative profit~~ operating margin for the hospital for at least 2 consecutive years during the five years prior to application for an extension.

ii. Days Cash-on-Hand less than 60.

iii. Current Ratio less than 1.5

~~iv. Long term debt to equity ratio greater than 65%~~

(b) The hospital has a bond rating based on the following table:

TABLE 1.5.2.8.7 Bond Rating Grades

Credit Risk	Moody's	Standard and Poor's	Fitch Ratings
Medium	Baa	BBB	BBB
Lower Medium	Ba	BB	BB
Lower Grade	B	B	B
Poor Grade	Caa	CCC	CCC
Speculative	Ca	CC	CC
No Payments / Bankruptcy	C	D	C
In Default	C	D	D

(c) For public hospitals, voters rejected a the most recent bond issue specifically related to seismic compliance construction work at the facility.

The data utilized to determine financial hardship shall be based on the hospital's most current fiscal reporting information filed with the Office or on the hospital's fiscal reporting information filed with the office for any of the most current three years.

8.8. Financial capacity report. The report shall demonstrate the hospital owner's financial capacity to implement the construction plans submitted pursuant to Section 1.5.2 Item 8.1(c).

8.9. Extension Adjustments. A hospital may request an extension adjustment necessary to complete the construction for the building granted an extension pursuant to Section 8. In order for this request to be considered, the hospital owner shall notify the Office in writing as soon as practicable, but in no event later than six months after the hospital owner discovered the change of circumstances. The request shall include at a minimum all of the following:

- (a) The length/duration of the additional extension time adjustment, but in no event the total extension including the adjustment shall exceed the period specified in Section 1.5.2 Item 8.
- (b) The name and OSHPD assigned number for the hospital building requiring the extension adjustment.
- (c) A narrative description and data supporting the discovered change of circumstances in completing the construction for the building granted an extension pursuant to Section 1.5.2 Item 8
- (d) An amended bar graph schedule required by Section 1.5.2 Item 8.1(a)(iii).

8.10. Extension Revocation/Termination. An extension for any hospital building granted pursuant to Section 1.5.2 Item 8 may be revoked or terminated based on the following:

- (a) The Office determines that any information submitted pursuant to this section was falsified; or,
- (b) The hospital failed to meet a milestone set forth in Sections 1.5.2 Item 8.1(a)(iii); or,

(c) Where the work of construction is abandoned or suspended for a period of at least six months, unless the hospital demonstrates in a publicly available document that the abandonment or suspension was caused by factors beyond its control.

1.6 Dispute Resolution/Appeals Process. Dispute resolution and appeals shall be in conformance with Article 5, Chapter 7, Part 1 of Title 24.

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1.8 Collapse Probability Assessment. Hospital owners may request a collapse probability assessment to reclassify buildings with an SPC-1 rating to SPC-2 in accordance with Section 1.4.5.1.2, or be used to determine eligibility for an extension in accordance with Section 1.5.2 Item 8.

Relocated section 1.4.5.1.2.1 and section 1.4.5.1.2.2 under new Section 1.8

1.4.5.1.2.1 **1.8.1** The collapse probability assessment by the Office shall be determined using the following:

1. Multi-Hazard Loss Estimation Methodology, Earthquake Module (HAZUS-MH **MR-2**) developed by the Federal Emergency Management Agency (FEMA) / National Institute of Building Sciences (NIBS).
2. Building specific input parameters required by the Advanced Engineering Building Module (AEBM) of the HAZUS methodology, shall be obtained from the Appendix H to Chapter 6.
3. Modifications by the Office to the AEBM input parameters are hereby adopted as shown in the Appendix H to Chapter 6, which are based on the following:
 - e) Building type
 - f) Building height and number of stories
 - g) Building age
 - h) Significant Structural Deficiencies listed in Section **1.4.5.1.2.2.2-1.8.2 Item 2.**
4. Site seismicity parameters adjusted for soil type, as determined by the Office, shall be the lesser of:
 - c) Deterministic ground motion due to the maximum magnitude earthquake event on the controlling fault system.
 - d) Probabilistic ground motion having 10% probability of being exceeded in 50 years.

1.4.5.1.2.2 Hospital buildings with SPC 1 rating may be reclassified as follows:

1. The Office shall issue a written notice to the hospital owners informing them that they may be eligible for reclassification of their SPC 1 buildings as permitted by Section 1.4.5.1.2.

2. For a building to be considered for reclassification, the hospital owner shall submit the following by January 1, 2012:

1.8.2 The collapse probability assessment for SPC-1 buildings shall be based on the following building information, parameters and documents:

2.1.1. A complete seismic evaluation of the building pursuant to Section 1.3.3.

EXCEPTION: Hospital owners who had submitted a complete structural evaluation report in compliance with Section 1.3.3, that is deemed to be complete by the Office, need not resubmit.

2.2 2. A supplemental evaluation report prepared by a California registered structural engineer that identifies the existence or absence of the building structural Lateral Force Resisting System (LFRS) properties and Significant Structural Deficiencies listed below:

a. Age: Year of the California Building Code (CBC) used for the original building design.

EXCEPTION: For pre-1933 buildings, the design year shall be reported.

b. Materials Tests: Office approved materials test results based on test plan pre-approved by the Office (Section 2.1.2).

c. Load path (Section 3.1)

d. Mass irregularity (Section 3.3.4).

e. Vertical discontinuity (Section 3.3.5),

f. Adjacent buildings (Section 3.4)

g. Short captive column (Section 3.6).

h. Material deterioration (Section 3.7).

i. Weak columns (Sections 4.2.8 & 4.3.6).

j. Wall anchorage (Section 8.2).

k. Redundancy (Section 3.2).

l. Weak story irregularity (Section 3.3.1).

- l m. Soft story irregularity (Section 3.3.2).
- m n. Torsional irregularity (Section 3.3.6).
- n o. Deflection incompatibility (Section 3.5).
- o p. Cripple walls (Section 5.6.4).
- p q. Openings (in Diaphragm) at shear walls (Section 7.1.4).
- q r. Topping slab missing (Sections 7.3 & 7.4) or the building type (structural system) is of lift slab construction.
- s. URM wall height to thickness ratio (Section 5.4.3)
- t. URM Parapets (Section 10.1.6)

This supplemental evaluation report shall include supporting documentation including existing construction drawings or reconstructed as-builts (Section 2.1.2) relating to the existence or absence of the Significant Structural Deficiencies listed above including calculations, where required, for review and acceptance by the Office, unless they are included in the complete structural evaluation.

2.3.3 Building systems shall be classified as to their Model Building Type per Table 1.4.5.11.8. For buildings with multiple building types, all types shall be listed. The building type resulting in the maximum collapse probability will be utilized by the Office to determine eligibility for reclassification.

Table 1.4.5.11.8: Model Building Type

Model Building Type (MBT)	Description
W1	Wood, Light Frame (≤ 5,000 sq. ft.)
W2	Wood, Greater than 5,000 sq.ft.
S1	Steel Moment Frame
S2	Steel Braced Frame
S3	Steel Light Frame
S4	Steel Frame with Cast-In Place Concrete Shear Walls
S5	Steel Frame with Un-reinforced Masonry Infill Walls
C1	Concrete Moment Frame
C2	Concrete Shear Walls
C3	Concrete Frame with Un-reinforced Masonry Infill Walls
PC1	Pre-cast Concrete Tilt-Up Walls
PC2	Precast Concrete Frames with Concrete Shear Walls flexible
RM1	Reinforced-masonry Bearing Walls with Wood or Metal Deck Diaphragms
RM2	Reinforced-masonry Bearing Walls with Concrete Diaphragms
URM	Unreinforced masonry Bearing Walls Rigid
MH	Manufactured Housing

2.4.4. Building height and number of stories above and below the seismic base shall be

specified.

5. For SPC-1 buildings where the potential for surface fault rupture and surface displacement at the building site is present as determined by Section 9.3, a supplemental geologic hazards report prepared by a California registered engineering geologist/seismologist is required to address the following:

- a. A site plan showing diagrammatically the location of the building footprint, the surface trace or traces of potential surface fault rupture.
- b. The expected surface displacement during a rupture event

[Note: Add new section 7-133(l)]

(l) SPC-1 hospital building seismic compliance extensions. The Office shall charge actual costs to cover the review and verification of the extension documents submitted, pursuant to Section 130060. (g) of the Health and Safety Code. The total cost paid for these services shall be nonrefundable.

Authority: Health and Safety Code Sections

Reference: Health and Safety Code Section

ARTICLE 5

PROCEDURES FOR SHEAR WALLS

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5.4 UNREINFORCED MASONRY SHEAR WALLS

Unreinforced masonry bearing wall buildings are automatically classified as SPC 1, unless reclassification is permitted per Sec. 1.4.5.1.2. The following provisions apply to unreinforced masonry shear wall structures that also possess a complete vertical load-carrying space frame.

5.4.1 SHEARING STRESS CHECK: The building satisfies the Quick Check of the shearing stress in the unreinforced masonry shear walls.

Generate the lateral loads using the Quick Check procedure of Sec. 2.4.7.3. The allowable stress (on the gross area) for solid brick masonry is 10 psi; for hollow unit masonry, 6 psi; and for grouted block masonry, 12.5 psi. If v_{avg} is greater than the allowable stress, an Advanced Analysis of the structure shall be performed, or the building shall be placed in SPC 1.

5.4.2 MASONRY LAY-UP: Filled collar joints of multiwythe masonry walls have negligible voids.

The deficiency is in the lay-up of the wall that left voids between the wythes. Investigate the lay-up. This can be done when masonry units are removed for strength tests. If voids are present, report this condition as a deficiency.

5.4.3 PROPORTIONS: The height/thickness ratio of the wall panels is as follows:

One-story building $h_w/t < 15$

Multistory building

Top story $h_w/t < 9$

First story $h_w/t < 15$

Other stories $h_w/t < 13$

The deficiency is in the out-of-plane strength of the wall. Check the out-of-plane demand using the procedure for parts and portions of a building given in Sec. 2.4.6.

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**ARTICLE 10
EVALUATION OF ELEMENTS THAT
ARE NOT PART OF THE LATERAL FORCE RESISTING SYSTEM**

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10.1.6 PARAPETS, CORNICES, ORNAMENTATION, AND APPENDAGES: There are no laterally unsupported unreinforced masonry parapets or cornices above the highest anchorage level with height/thickness ratios greater than 1.5. Concrete parapets with height/thickness ratios greater than 1.5 have vertical reinforcement. Cornices, parapets, signs, and other appendages that extend above the highest anchorage level or cantilever from exterior wall faces and other exterior wall ornamentation are reinforced and well anchored to the structural system.

For conforming buildings, the evaluator may consider this condition as mitigated, and no calculations are necessary. If any of these items are of insufficient strength and/or are not securely attached to the structural elements, they may break off and fall, becoming significant life-safety hazards. Check the adequacy of these items using the forces specified in Section 2.4.6. The maximum height of an unbraced URM parapet shall be determined based on the height dimension measured above the lower of either the level of tension anchors or roof sheathing to the top of the wall parapet. The minimum height of a parapet above the wall anchor should be 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 6 inches.

10.1.7 MEANS OF EGRESS: Canopies are anchored and braced to prevent collapse and blockage of building exits. For conforming buildings, the evaluator may consider this condition as mitigated, and no calculations are necessary. Check canopies for the forces specified in Section 2.4.6.

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**EVALUATION STATEMENTS FOR
VERTICAL SYSTEMS RESISTING LATERAL FORCES
(Continued)**

Address the following evaluation statements, marking each either true (T) or false (F). Statements that are found to be true identify issues that are acceptable according to the criteria of these regulations; statements that are found to be false identify issues that need investigation. For guidance in the investigation, refer to the section indicated in parentheses at the end of the statement.

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Unreinforced Masonry Shear Walls

T F N/A SHEARING STRESS CHECK: The building satisfies the Quick Check of the shearing stress in the unreinforced masonry shear walls. (Section 5.4.1)

T F N/A MASONRY LAY-UP: Filled collar joints of multiwythe masonry walls have negligible voids. (Section 5.4.2)

T F N/A PROPORTIONS: The height/thickness ratio of the wall is as follows:
(Section 5.4.3)

One-story building $h_w/t < 15/13$

Multistory building

Top story $h_w/t < 9$

First story $h_w/t < 15$

Other stories $h_w/t < 13$

Infill Walls in Frames

T F N/A PROPORTIONS: The height/thickness ratio of the wall panels is as follows: (Section 5.5.1)

One-story building $h_w/t < 14$

Multistory building

Top story $h_w/t < 9$

Other stories $h_w/t < 20$

APPENDIX H TO CHAPTER 6
HAZUS AEBM REGULATIONS

Significant Structural Deficiency/Condition ¹	Capacity		Response		Structural Damage - Complete Damage State						Collapse	
	Over-Strength		Duration		Fragility Curve Median ⁴				Fragility Curve Variability - Beta Factor ((c))		Collapse Factor (P[COL STR _c])	
	Gamma and Lambda Factors		Degradation (Kappa) Factor		Maximum Story Drift Ratio ((c))		Mode Shape (Alpha 3) Factor					
	SubBase	USB	SubBase	USB ⁵	SubBase	USB	SubBase	USB ⁶	SubBase	USB ⁵	SubBase	USB ⁶
Age (Pre-1933 buildings)	X	X ⁷										
Materials Testing (None)	X								X			
No Redundancy									X		X	X ⁶
Weak Story Irregularity					X		X	X ⁶			X	X ⁶
Soft Story Irregularity					X		X	X ⁶			X	X ⁶
Mass Irregularity					X							
Vertical Discontinuity	X				X							
Torsional Irregularity						X					X	X ⁶
Deflection Incompatibility ²					X				X		X	X ⁶
Short Column ³	X					X						
Wood Deterioration		X	X									
Steel Deterioration		X	X									
Concrete Deterioration		X	X									
Weak Column-Steel	X				X							
Weak Column-Concrete	X		X		X							
No Cripple Wall Bracing					X		X	X ⁶			X	X ⁶
Topping Slab	X		X						X		X	X ⁶
Inadequate Wall Anchorage/Parapet Bracing		X							X			
Load Path/Diaphragm Openings									X		X	X ⁶
URM Wall Thickness Ratio											X	X ⁶

1. Sub-Baseline (SubBase) and Ultra-Sub-Baseline (USB) properties are based on one, or more, significant structural deficiencies.
2. The Deflection Incompatibility structural deficiency applies only to concrete systems (C1, C2 and C3).
3. The Short Column structural deficiency applies only to concrete and masonry systems (C1, C2, C3, RM1 and RM2).
4. Effects of deficiencies related to drift and mode shape limited to a combined factor of 5 reduction in Complete median (of HAZUS default value).
5. Grey shading indicates USB performance is not defined/used for deficiencies related to degradation (kappa) and fragility curve (beta) factors.
6. USB performance required for systems with multiple, SubBase deficiencies related to either the mode shape (Alpha 3) factor or the collapse rate.
7. USB performance required for pre-1933 buildings with other over-strength-related deficiencies (else use SubBase performance for pre-1933 buildings).

Table A6-4 Alpha 1 and Alpha 2, Modal Factors

No. of Stories	Alpha 1 (α_1) - Modal Weight Factor				Alpha 2 (α_2) - Modal Height Factor	
	Structural System (MBT)				Structural System (MBT)	
	S1 and C1	W1, W2, S2, S3, S4, C2, C3, PC2, RM1 and RM2	PC1 and URM	MH	MH	All Systems (except MH)
1	0.75	0.8	0.75	1.00	1.00	0.75
2	0.75	0.8	0.75			0.75
3	0.75	0.8	0.75			0.75
4	0.75	0.8	0.75			0.75
5	0.75	0.8	0.75			0.75
6	0.73	0.79				0.72
7	0.71	0.78				0.69
8	0.69	0.77				0.66
9	0.67	0.76				0.63
10	0.65	0.75				0.60
11	0.65	0.75				0.60
12	0.65	0.75				0.60
13	0.65	0.75				0.60
14	0.65	0.75				0.60
>= 15	0.65	0.75				0.60

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Table A6-7 Elastic Damping

Structural System (MBT)	β_E Elastic Damping (% of Critical)
MH	5%
S1, S2, S3 and S4	5%
C1, C2, PC1 and PC2	7%
RM1 and RM2	7%
<u>URM</u> , C3 and S5	7%
W1 and W2	10%

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Table A6-9 Interstory Drift Ratio – Median Complete Structural Damage

Structural System (MBT)	Interstory Drift Ratio (max story) - Median Complete Structural Damage (Δ_c)					
	Baseline Performance		SubBase Performance		USB Performance	
	Post-61	Pre-61	Post-61	Pre-61	Post-61	Pre-61
W1, W2 (MH)	0.075	0.075	0.060	0.060	0.038	0.038
S1, C1, S2 and C2	0.060	0.050	0.050	0.040	0.030	0.025
S3, S4, PC1, PC2, RM1 and RM2	0.053	0.044	0.044	0.035	0.027	0.022
S5, C3 and URM		0.035		0.028		0.018

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Table A6-12 Collapse Factor

Structural System (MBT)	Collapse Factor - Likelihood of Collapse given Complete Structural Damage - P[COL STR ₅]		
	Baseline Performance	SubBase Performance	USB Performance
W1 and W2 (MH)	0.05	0.10	0.20
S1, S2, S3, S4 and S5	0.08	0.15	0.30
C1, C2 and C3	0.13	0.25	0.50
RM1 and RM2	0.13	0.25	0.50
PC1 and PC2	0.15	0.30	0.60
URM	0.15	0.30	0.60

NOTATION

- Authority: Health and Safety Code Section 130005(g) & 130021
- Reference: Health and Safety Code Section 1275, 129850 & 130005(g)