

**FINAL STATEMENT OF REASONS  
TO  
BUILDING STANDARDS  
OF THE  
STATE HISTORICAL BUILDING SAFETY BOARD  
REGARDING THE  
CALIFORNIA HISTORICAL BUILDING CODE  
CALIFORNIA CODE OF REGULATIONS, TITLE 24, PART 8**

**Amendments to  
Chapter 8-7, Structural Regulations  
Chapter 8-8, Archaic Materials and Methods of Construction**

The Administrative Procedure Act requires that every agency shall maintain a file of each rulemaking that shall be deemed to be the record for that rulemaking proceeding. The rulemaking file shall include a final statement of reasons. The Final Statement of Reasons shall be available to the public upon request when rulemaking action is being undertaken. The following are the reasons for proposing this particular rulemaking action:

**UPDATES TO THE INITIAL STATEMENT OF REASONS:** (Government Code Section 11346.9(a)(1) requires an update of the information contained in the initial statement of reasons. If update identifies any data or any technical, theoretical or empirical study, report, or similar document on which the state agency is relying that was not identified in the initial statement of reasons, the state agency shall comply with Government Code Section 11347.1)

No data or any technical, theoretical or empirical study, report or similar document on which DSA is relying has been added to the rulemaking file that was not identified in the Initial Statement of Reasons.

**MANDATE ON LOCAL AGENCIES OR SCHOOL DISTRICTS** (Pursuant to Government Code Section 11346.9(a)(2), if the determination as to whether the proposed action would impose a mandate, the agency shall state whether the mandate is reimbursable pursuant to Part 7 of Division 4. If the agency finds that the mandate is not reimbursable, it shall state the reasons for the finding(s))

The State Historical Building Safety Board has determined that the proposed regulatory action WOULD NOT impose a mandate on local agencies or school districts.

**OBJECTIONS OR RECOMMENDATIONS MADE REGARDING THE PROPOSED REGULATION(S)** (Government Code Section 11346.9(a)(3))

[List a summary of EACH objection or recommendation regarding the specific adoption, amendment, or repeal proposed, and explanation of how the proposed action was changed to accommodate each objection or recommendation, or the reasons for making no change. This requirement applies only to objections or recommendations specifically directed at the agency's proposed action or to the procedures followed by the agency in proposing or adopting the action or reasons for making no change.

Comments were received from the following during the 45-Day comment period:

Nels Roselund, S.E. (Roselund)  
The Roselund Engineering Company  
8453 East Yarrow Street  
South San Gabriel, CA 91770

Mel Green, S.E. (Green)  
Mel Green Associates

21311 Hawthorne Blvd., #230  
Torrance, CA 90503

Gary R. Searer, S.E and Terrence F. Paret (Searer/Paret)  
Wiss, Janey Elstner Associates, Inc. (WJE)  
2550 North Hollywood Way, Suite 502  
Burbank, CA 91505

Kenneth A. Luttrell, S.E., Chairman (Luttrell/SEAOC EBC)  
Structural Engineers Association of California, Existing Building Committee (SEAOC EBC)  
c/o CYS Engineers  
2500 Venture Oaks Way, Suite 100  
Sacramento, CA 95833

(See below for SHBSB response to comments.)

### **DETERMINATION OF ALTERNATIVES CONSIDERED AND EFFECT ON PRIVATE PERSONS**

(Government Code Section 11346.9(a)(4))

The State Historical Building Safety Board has determined that no alternative considered would be more effective in carrying out the purpose for which the regulation is proposed or would be as effective as and less burdensome to affected private persons than the adopted regulation

### **REJECTED PROPOSED ALTERNATIVE THAT WOULD LESSEN THE ADVERSE ECONOMIC IMPACT ON SMALL BUSINESSES:** (Government Code Section 11346.9(a)(5))

The regulations do not cause an adverse impact on small businesses.

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## **Chapter 8-7**

*Note: Item numbers are those found in the Initial Statement of Reasons*

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### **Section 8-705.2.1**

#### Comment

#### **Green**

Green asked about a definition for unsafe and felt that inelastic performance would be difficult to do with Brick and adobe.

#### **Shearer/Paret**

Comments suggested changes to wording to base strengthening on the intent of the performance objectives in Section 8-701.2. Also recommended was a reference to the seismic loading in the regular code instead of the term "extreme" seismic loadings. A recommendation to replace "unsafe" with the term "dangerous" was suggested.

#### Response

SHBSB proposes to amend Section 8-705.2.1 based on a stakeholder comment recommending that the new language not supersede or exceed the goals laid out in 8-702.1. The new language in Section 8-705.2.1 could be read so as to require somewhat more stringent conformance to those goals. The amended text reflects the recommendation of the commenter.

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### **Section 8-706.1**

## Comment

### **Shearer/Paret**

Commenter recommended a reformatting of the section to eliminate confusion. The change to a list of items instead of running text would accomplish this goal.

## Response

SHBSB proposes to amend Section 8-706.1 based on a stakeholder comment recommending that the section be reformatted. The four numbered items proposed by the commenter are intended to eliminate possible ambiguity in the interpretation of the section.

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## **Section 8-706.1.1**

## Comment

### **Shearer/Paret**

The commenter believes the wording proposed would actually exceed the code requirements for the design of new buildings. The commenter recommended adding the phrase “regardless of its relative rigidity” at the end of the section.

### **Luttrell SEAOC EBC**

The commenter believes that the language would result in a reduction of the base shear (75% times 75%).

## Response

SHBSB proposes to amend Section 8-706.1.1 based on the stakeholder comment recommending the addition of the proposed language. The Board does not agree with the comment reducing the base shear as stated. Section 8-706.1 will determine base shear.

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## **Section 8-706.1.2**

## Comment

### **Shearer/Pater**

The reference to the UCBC is out of date; the reference should be to the California Existing Building Code. The Chapter currently limits the reliable strength of masonry to 100 psi, regardless of the results of in-situ testing -- a limit that violates fundamental engineering principles as well as common sense. We recommend that a sentence be included in the CHBC permitting this limit to be exceeded in the event that testing demonstrates that the strength of the masonry exceeds the limit.

### **Luttrell SEAOC EBC**

There is no reason to reference the 2006 IEBC which is both obsolete and already replaced by Title 24 Part 10 (the CEBC). We recommend replacing all references to 2006 IEBC with reference to latest CEBC.

## Response

The Board accepts both comments and will change the code text accordingly. Reference to the IEBC will be changed to the 2010 CEBC throughout the code.

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## **Section 8-706.1.3**

## Comments

**Sheared/Paret**

Commenter agrees with intent but suggests alternate wording to address the lack of definition for “increased lateral loads.”

Response

The Board accepts the recommended change referencing “expected inelastic deformations.”

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**Section 8-706.2.1**Comments**Green**

Commenter recommends that “Fail” needs to be defined.

**Shearer/Paret**

Commenter believes that this change is similar to their concerns for some of the prior sections, the changes in this section could similarly be interpreted to include consideration of seismic demands in excess of those required by the regular code for new buildings. Since it doesn’t make sense for historic structures to be evaluated and strengthened for demands greater than required for new buildings. Proposed changes were recommended to address the issue.

Response

The Board agrees and accepts the proposed changes recommended by Shearer/Paret. The Board does not believe a definition of fail is necessary.

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**Chapter 8-8**Comment**Green**

Commenter asked what was meant by “class” in Section 8-801.3. There are no changes proposed to that section. No response necessary.

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**Section 8-802**Comment**Luttrell SEAOC EBC**

Commenter recommends replacing “Ultimate Strength” with “Strength Levels.”

**Shearer/Paret**

Commenter disagrees with deleting the provisions for allowable stress. Many engineers still use and are most familiar with allowable stress design for wood structures, and use of allowable stress does not preclude proper understanding of how these structures work. Building officials are likewise more familiar with allowable stress concepts for many types of structures and materials. Commenter recommends beginning the section with “Allowable stresses or ultimate strengths . . .”

Response

The Board chose to change “Allowable stresses or ultimate strength values” to “Strength values.” This provides flexibility to use either allowable stress or ultimate strength, as appropriate, as

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recommended by the commenter. This also addresses the comment made by Luttrell SEAOC EBC.

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### **Section 8-805.1**

#### Commenter

##### **Green**

Commenter asked why was the h/t for brick walls raised to 13 from 12. This is not a recommended change; no response is necessary.

##### **Shearer/Paret**

Commenter suggests that the section should reference the 2009 IEBC.

##### **Luttrell SEAOC EBC**

Commenter questions the change from 3 to 9 psi and recommends a change of reference in the final sentence..

#### Response

Reference to the 2009 IEBC is being changed throughout the code by referencing the 2010 CEBC. The nine pounds per square inch is a low number that can be used without testing. From allowable stresses to strength value is a change by a factor of three. Going from three to nine is consistent with this change. This is a value that can be used without testing.

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### **Section 8-802.2.2**

#### **Shearer/Paret**

Commenter recommends a change in the last sentence. In some cases, it may be impossible, infeasible, or otherwise extremely disruptive to the historic elements to install a new bond beam or equivalent structural element at the top of a stone masonry wall; requiring the new element be installed near the top gives the engineer more flexibility to preserve the structure. Sometimes, masonry walls are addressed by casting a new reinforced concrete wall adjacent to the wall; allowing the new element to be near the top would allow this practice to continue. Finally, only stone masonry walls that are reasonably expected to collapse or lead to life-threatening injury should be required to be strengthened.

#### **Luttrell SEAOC EBC**

Commenter opposes the proposed sentence as arbitrary and overly-prescriptive.

#### Response

SHBSB proposes to remove the last sentence of Section 8-805.2.2 based on a stakeholder comment recommending its removal because it is arbitrary and overly-prescriptive. The Board agreed and added a clarifying sentence in its place, adding the provision of "strengthening element." The last sentence added recognizes that there may or may not be a reinforcing element. The determination of the placement of a reinforcing element will rely on engineering judgment.

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### **Section 8-805.2.3**

#### Commenter

##### **Roselund**

Commenter indicates that the pull test can damage the wall if the shape of the stone acts as a wall anchor. A lot of damage can be done to a building before a sufficient number of successful tests are completed. Commenter believes that potential damage to historic structures by this test justifies a recommendation to eliminate it from the CHBC. If the test is kept in the CHBC, it should be accompanied by a Standard procedure similar to Section A106.3.3 of IEBC that includes use of exploratory drilling to find the shape of the stone before it is tested

**Shearer/Paret**

This section should refer to the 2009 IEBC, which is the most current published edition. The 2009 IBC will be adopted in California by the time this new version of the CHBC is adopted. Referring to a prior edition of the IEBC will be confusing, even if the requirements are essentially the same.

**Luttrell SEAOC EBC**

Commenter opposes this change because the 2006 IEBC (or CEBC) provisions for brick masonry do not apply to stone masonry. Even though the UBC Standard has been replaced by the IEBC (or CEBC), it too was inappropriate for this use, so the simple replacement of the reference standard only perpetuates the problem.

Response

The Board proposes to not to accept the comments relating to the testing of stone masonry. The proposal is to change the reference to the current edition of the International Existing Building Code, and therefore the CEBC, and does not address subject of the code text.

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**Section 8-806.1**

Commenter

**Luttrell SEAOC EBC**

We oppose the proposed new sentence as unclear, unenforceable, and probably unnecessary. First, "should be considered" is not enforceable code language. Second, why is it even necessary to say this; that is, when would a project be exempt from "the following provisions"? Third, the requirement for voluntary work conflicts with Section 8-702.2, which already explicitly and properly allows voluntary improvements (as does the "regular code"). Forth, the term "mandatory" is unclear because it is not adequately distinguished from "triggered."

Response

The Board proposes to accept the public comment to delete the added section.

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**Section 8-806.2**

Comment

**Luttrell SEAOC EBC**

Strike out "or" in front "un-stabilized".

Response

The Board proposes to amend Section 8-806.2 based on a stakeholder comment recommending the deletion of the word "or" after the word "un-maintained" in the fourth line of the section. This is a non-substantive grammatical correction.

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**Section 8-806.3**

## Comment

### **Roselund**

A greater H/t in the first story than in the second story of an adobe building is appropriate due to the greater stability provided by the overburden weight of the second story. I believe that the H/t values of the CHBC are inverted and a value of 6 is appropriate for one-story and first story walls; 5 is appropriate to account for amplified seismic response of walls in the upper story.

### **Luttrell SEAOC EBC**

Opposes adding the proposed words “such as a bond beam” as commentary. Also, in the first sentence, the strikeout-underline format in the published Express Terms is incorrect. We assume that the intent was also to delete the words “shall meet the following requirements.”

## Response

The Board proposes to amend Section 8-806.3 based on a stakeholder comment recommending the reversal of the H/T ratio. The Board did not accept the comment regarding the bond beam as commentary. The first sentence has been amended to address the Luttrell comment.

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## **Section 8-806.4**

## Comment

### **Green**

Comment is a question and does not propose a change to the section. No response necessary.

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## **Section 8-806.5**

## Comment

### **Roselund**

Commenter recommends deleting “Where required” in the first sentence; the remainder of the sentence tells where a bond beam is required. If a commentary-like description of the function of the bond beam is needed, as in the second sentence, suggest the following: The size and configuration of the bond beam shall be designed to provide effective anchorage of the wall to the diaphragm and to provide a tension element designed to distribute diaphragm shear in the plane of the wall across wall openings to wall piers of differing rigidities.

### **Shearer/Paret**

Commenter recommends that As in Section 805.2.2, the new bond beam or equivalent structural element should be provided *at or near* the top of the wall, not necessarily at the exact top of the wall.

### **Luttrell SEAOC EBC**

Commenter opposes adding “Where required” as redundant and confusing.

## Response

The Board proposes to amend Section 8-806.5 based on a stakeholder comment recommending changing the term “required” to “provided” in the first sentence.” The board accepted the comment that “Where required” was redundant. The Board declined to add the suggested commentary language.

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## **Section 8-806.7**

Comment

**Luttrell SEAOC EBC**

Commenter recommends replacing “Ultimate Strength” with “Strength Levels.”

Response

The Board proposes to amend Section 8-806.7 based on a stakeholder comment recommending that the term “ultimate strength” be replaced by “strength level.” The text reflects that change; this is consistent with previous changes made by the Board based on similar comments.

**Green 8-810**

Comment

Hollow Clay Tile (HCT) Good advice but fails to define structural HCT vs. non-structural HCT. Structural HCT is about the same dimensions as modern concrete block. But the non-structural type was used in some dwellings. Non-structural HCT is in the corridors, stair shafts, and elevator shafts, of most early high rise buildings.

Response

This is a comment that does not propose a change to the section. No response is required.

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**Table 8-8-A**

Comment

**Shearer/Paret**

Commenter recommends that since the table is modified to provide strength-level capacities, the heading of the second column of the table needs to be modified from “Allowable Values” to “Strength-Level Capacity”.

**Luttrell SEAOC EBC**

Commenter opposes the change as an incorrect way to adjust default capacities to strength level. If the intent is to reference values from consensus provisions, the reference should be CEBC Table A1-D, not an out-of-date version of the IEBC. If the IEBC table must be reproduced here, the revision should be fully edited. Additionally, whether or not the CEBC version of the table is referenced or copied here, the appropriateness of these values cannot be determined until a performance objective is stated. For any traditional Collapse-based performance objective, the increased values proposed are inconsistent with the capped demands of 8-706.1.

Response

The Board proposes to amend Table 8-8-A based on a stakeholder comment recommending the heading in the second be changed to read Strength Level Capacity. The SHBSB believes that the provisions in Table 8-8-A are appropriate based on the values shown. The comment about the values being inconsistent with Section 8-706.1 does not recognize the proposed modifications to that section. The SHBSB believes that the performance objectives are adequately addressed in Section 8-701. The identified editorial errors have been corrected.

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**Table 8-8-B**

Comment

**Table 8-8-B – Green**

Horizontal Diaphragm values conflict with IEBC table A1-E (2009 Edition)

Crosswalls use a 133 percent vs. 120 in Appendix A1.

#### **Table 8-8-B – Roselund**

Item 1.1: #8 screws that work well and that are ICC approved as structural connectors for diaphragms and shear walls [QuikDrive ICC-ESR 1472 for example] are more available and are more enforceable than generic #6 screws.

Item 1.1: The requirement for specific screw lengths should be replaced with requirement for adequate penetration through the existing sheathing into the rafters or joists. The strength values for a board-sheathed diaphragm with plywood overlay are significant increases over strength values for board sheathing alone; for transfer of that increased shear into edge members to be transferred into bond beams, connectors in addition to the old board-sheathing nails are needed. Also, heavy wall-anchor loads may require that the framing members to which wall anchors are connected be directly connected to the plywood sheathing; therefore the screws must engage the framing members with adequate penetration.

Item 1.2: Panel edges on framing members and also on centers of individual diagonal sheathing boards would result in plywood panels being cut into parallelograms and triangles. That cannot be an appropriate intent; it is not a tested system.

#### **Table 8-8-B SEAOC EBC**

We oppose this change as lacking a sufficient justification. The ISOR has provided no specifics or references. Additionally, the appropriateness of these values cannot be determined until a performance objective is stated. For any traditional Collapse-based performance objective, the increased values proposed are inconsistent with the capped demands of 8-706.1. Also, Government Code 11346.2b2 requires the SHBSB to identify each technical, empirical, and theoretical study, report, or document upon which the agency relies for its proposal. Stating that the IEBC is the document does not appear to provide sufficient evidence for justifying the proposed deviations from the IEBC in Table 8-8-B.

#### Response

The Board proposes to amend the heading in right column of Table 8-8-B to read Strength Level Capacity for consistency based on a stakeholder comment. SHBSB accepts a comment recommending that the screw size #6 in item 1.1 under Diaphragms be changed to #8. The SHBSB is removing a portion of the second line in item 1.1 to respond to a comment that addresses an issue with the edges of the plywood and the transfer of shear to the edge members.

#### **TECHNICAL, THEORETICAL, AND EMPIRICAL STUDY, REPORT, OR SIMILAR DOCUMENTS**

**(Government Code Section 11346.2(b)(2) requires an identification of each technical, theoretical, and empirical study, report, or similar document, if any, upon which the agency relies in proposing the regulation(s).)**

The State Historical Building Safety Board relied on applicable provisions of the International Existing Building Code (IEBC) 2009.

#### **CONSIDERATION OF REASONABLE ALTERNATIVES**

**(Government Code Section 11346.2(b)(3)(A) requires a description of reasonable alternatives to the regulation and the agency's reason for rejecting those alternatives. In the case of a regulation that would mandate the use of specific technologies or equipment or prescribe specific action or procedures, the imposition of performance standards shall be considered as an alternate.)**

The California Historical Building Code is an alternative to the regular code applicable for use in the preservation, restoration, rehabilitation relocation or reconstruction of buildings or properties designated as qualified historical buildings or properties. Other alternatives may be considered for use in the preservation, restoration, rehabilitation relocation or reconstruction of buildings or properties designated as qualified historical buildings or properties if they meet the intent and purpose of the CHBC.

**REASONABLE ALTERNATIVES THE AGENCY HAS IDENTIFIED THAT WOULD LESSEN ANY ADVERSE IMPACT ON SMALL BUSINESS.**

**(Government Code Section 11346.2(b)(3)(B) requires a description of any reasonable alternatives that have been identified or that have otherwise been identified and brought to the attention of the agency that would lessen any adverse impact on small business. Include facts, evidence, documents, testimony, or other evidence upon which the agency relies to support an initial determination that the action will not have a significant adverse impact on business.)**

The California Historical Building Code (CHBC) is an alternative to the regular code applicable for use in the preservation, restoration, rehabilitation relocation or reconstruction of buildings or properties designated as qualified historical buildings or properties. The use of the CHBC is an alternative to small businesses when utilizing qualified historical buildings or properties.

**FACTS, EVIDENCE, DOCUMENTS, TESTIMONY, OR OTHER EVIDENCE OF NO SIGNIFICANT ADVERSE IMPACT ON BUSINESS.**

**(Government Code Section 11346.2(B)(4) requires the facts, evidence, documents, testimony, or other evidence on which the agency relies in to support an initial determination that the action will not have a significant adverse economic impact on business)**

The California Historical Building Code (CHBC) is an alternative to the regular code applicable for use in the preservation, restoration, rehabilitation relocation or reconstruction of buildings or properties designated as qualified historical buildings or properties. The use of the CHBC is an alternative to small businesses when utilizing qualified historical buildings or properties.

**DUPLICATION OR CONFLICTS WITH FEDERAL REGULATIONS (Government Code Section 113465.2(b)(5) requires a department, board, or commission within the Environmental Protection Agency, the Resources Agency, or the Office of the State Fire Marshal to describe its efforts, in connection with a proposed rulemaking action, to avoid unnecessary duplication or conflicts with federal regulations contained in the Code of Federal Regulations addressing the same issues. These agencies may adopt regulations different from these federal regulations upon a finding of one or more of the following justifications: (A) The differing state regulations are authorized by law and/or (B) The cost of differing state regulations is justified by the benefit to human health, public safety, public welfare, or the environment. It is not the intent of this paragraph to require the agency to artificially construct alternatives or to justify why it has not identified alternatives)**

There are no federal regulations applicable to qualified historical buildings or properties.