



**CODE ADVISORY COMMITTEE**  
**Notice of**  
**Regular Meeting of the**  
**Structural Subcommittee**

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**DATE:** February 11, 2014 (Tuesday)  
**TIME:** 9:00 AM to 11:00 AM **PLEASE NOTE**  
**LOCATION:** 1660 Mission St., Room 6034 **CHANGE IN LOCATION!!!**

This Subcommittee generally meets regularly on the second Tuesday of each month at 1660 Mission St., Room 2031. (DBI Office).

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Note: Public comment is welcome and will be heard during each agenda item. Reference documents relating to agenda are available for review at Technical Services Division. For information or if you wish to be placed on a mailing list for agendas, please email to Yan Yan Chew as follows: [Yanyan.chew@sfgov.org](mailto:Yanyan.chew@sfgov.org)

**AGENDA**

- 1.0 Call to Order and Roll Call  
Members: Stephen Harris, S.E.; Chair; Rene' Vignos, S.E.; Marc Cunningham; Tony Lau; Ned Fennie, A.I.A.
- 2.0 Approval of the minutes of the Structural Subcommittee regular meeting of January 14, 2014.
- 3.0 Discussion and possible action regarding Draft Ordinance on Earthquake Performance Evaluation of Private School Structures
- 4.0 Discussion and possible action regarding proposed AB-108 – Application of California Existing Building Code, Appendix Chapter A3
- 5.0 Discussion and possible action regarding SEAU Position Statement Regarding the Acceptance of Adhesive Concrete Anchors under the Provisions of the 2012 IBC
- 6.0 Discussion and possible action on Issues re Section 3402B Exception 1
- 7.0 Discussion and possible action on draft AB on Guidelines for the Structural Review of Special Moment Frame Beam Lateral Bracing used in Light Frame Wood Construction for Seismic Applications.
- 8.0 Discussion and possible action on SFBC Section 3404.7.2.
- 9.0 Discussion and possible action on AB-102 Substantial Change expanding applicability to R2 occupancy.
- 10.0 Subcommittee Member's and Staff's identification of new agenda items, as well as current agenda items to be continued to another subcommittee regular meeting or special meeting. Subcommittee discussion and possible action regarding administrative issues related to building codes.

- 11.0 Public Comment: Public comment will be heard on items not on this agenda but within the jurisdiction of the Code Advisory Committee. Comment time is limited to 3 minutes per person or at the call of the Chair.
- 12.0 Adjournment

Note to Committee Members: Please review the appropriate material and be prepared to discuss at the meeting. **If you are unable to attend, please call Chairperson Stephen Harris, S.E. at (415) 495-3700.** The meeting will begin promptly. See attached materials for information about meeting accessibility.

### **KNOW YOUR RIGHTS UNDER THE SUNSHINE ORDINANCE** (Chapter 67 of the San Francisco Administrative Code)

**Government's duty is to serve the public, reaching its decisions in full view of the public. Commissions, boards, councils and other agencies of the City and County exist to conduct the people's business. This ordinance assures that deliberations are conducted before the people and that City operations are open to the people's review.**

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The meeting will be held at the Department of Building Inspection, 1660 Mission Street. The closest accessible BART stations are the Civic Center Station at 8th (at the United Nations Plaza) and Market Street and 16th at Mission Street.

Accessible MUNI/Metro lines servicing this location are the, 42 - Downtown, 14 & 14 Limited - Mission, and F - Market bus lines. For information about MUNI accessible services call (415) 923-6142.

The meeting room is wheelchair accessible. Accessible curb side parking spaces have been designated on Mission and Otis Streets. There is accessible parking available within the Department of Building Inspection parking lot. The entrance to this lot is on Otis Street.

Accessible seating for persons with disabilities (including those using wheelchairs) will be available. Assistive Listening devices will be available at the meeting. A sign language interpreter will be available upon request. Agendas and Minutes of the meeting are available in large print/tape form and/or readers upon request. Please contact Technical Services Division at (415) 558-6205, providing 72 hours notice will help to ensure availability.

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Materials are available in alternate formats on request.



## CODE ADVISORY COMMITTEE

### Regular Meeting of the Structural Subcommittee

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**DATE:** January 14, 2014 (Tuesday)  
**TIME:** 9:00 AM to 11:00 AM  
**LOCATION:** 1660 Mission St., Room 6034

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Note: Public comment is welcome and will be heard during each agenda item. Reference documents relating to agenda are available for review at Technical Services Division. For information or if you wish to be placed on a mailing list for agendas, please email to Yan Yan Chew as follows: [Yanyan.chew@sfgov.org](mailto:Yanyan.chew@sfgov.org)

### Draft MINUTES

#### Present

Stephen Harris, S.E.  
Rene' Vignos, S.E.  
Marc Cunningham  
Ned Fennie, A.I.A.

#### Absent

Tony Lau

#### **Other Present**

David Bonowitz, S.E.  
Pat Buscovich, S.E.  
David Leung, DBI  
Robert Chun, DBI  
Eric Gee, DBI

#### **1.0 Call to Order and Roll Call.**

**Members: Stephen Harris, S.E.; Chair; Rene' Vignos, S.E.; Marc Cunningham; Tony Lau; Ned Fennie, A.I.A.**

Meeting was called to order at 9:00 a.m. Quorum established with 4 members present.

#### **2.0 Approval of the minutes of the Structural Subcommittee special meeting of November 11, 2013.**

## **Structural Subcommittee**

A motion to approve the minutes. Seconded and approved.

### **3.0 Discussion and possible action on Issues re Section 3402B Exception 1**

David Bonowitz will draft information sheet for further discussion.

### **4.0 Discussion and possible action on draft AB on Guidelines for the Structural Review of Special Moment Frame Beam Lateral Bracing used in Light Frame Wood Construction for Seismic Applications.**

No discussion. This draft AB will be discussed in SEAONC.

### **5.0 Discussion and possible action regarding Private School Earthquake Safety.**

No discussion.

### **6.0 Discussion and possible action on SFBC Section 3404.7.2.**

No discussion.

### **7.0 Discussion and possible action on AB-102 Substantial Change expanding applicability to R2 occupancy.**

This will be further researched by Pat Buscovich and discussed with possible input from SEAONC.

8.0 Items 3 thru 7 will be included to the agenda in next meeting.

### **9.0 Public Comment:**

No public comment.

### **10.0 Adjournment.**

The meeting was adjourned at 10:30 a.m.

1 [Building Code - Earthquake Performance Evaluation of Private School Structures]

2

3 **Ordinance amending the Building Code to require that existing K-12 private schools**  
 4 **obtain an evaluation by a licensed structural engineer for performance during a future**  
 5 **earthquake, and assessing a fee for Building Department review and related evaluation**  
 6 **processing; requiring that a building changing to a school occupancy classification**  
 7 **shall comply with the evaluation requirements; making environmental findings and**  
 8 **findings under the California Health and Safety Code; and directing the Clerk of the**  
 9 **Board of Supervisors to forward this ordinance to the California Building Standards**  
 10 **Commission upon final passage.**

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

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

19 Section 1. General Findings.

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

25 (b) Pursuant to Charter Section D3.750-5, the Building Inspection Commission  
 considered this ordinance on \_\_\_\_\_, 2014 at a duly noticed public hearing.

1 Section 2. Findings under the California Health and Safety Code. This Board hereby  
2 finds that this ordinance does not modify a State “building standard,” as that term is defined in  
3 Section 18909 of the California Health and Safety Code. Therefore, the finding of local  
4 climactic, geological, or topographical conditions required by Sections 18941.5 and 17958.7 is  
5 not required.

6  
7 Section 3. Specific Findings. The Board of Supervisors hereby finds and declares as  
8 follows:

9 (a) In Section 19160 of the California Health and Safety Code, the State Legislature  
10 declared that because of the generally acknowledged fact that California will experience  
11 moderate to severe earthquakes in the foreseeable future, increased efforts to reduce  
12 earthquake hazards should be encouraged and supported. Section 19161 authorizes each  
13 city, city and county, or county to assess the earthquake hazard in its jurisdiction and identify  
14 buildings that may be potentially hazardous to life in the event of an earthquake.

15 (b) In December 2004, the California Seismic Safety Commission (SSC) issued a  
16 report on “Seismic Safety in California’s Schools,” which contains Findings and  
17 Recommendations on Seismic Safety Policies and Requirements for Public, Private, and  
18 Charter Schools. The SSC report was made in response to inquiries from members of the  
19 Legislature, the public and parents, and concerns about the risks posed by older school  
20 buildings, the different seismic standards for public, private and charter schools, and the  
21 safety of buildings converted to school use.

22 (c) The data collected by the SSC for its 2004 report showed that almost 9% of  
23 California’s school children attended private schools, ten counties had more than 10% of their  
24 total students enrolled in private schools, and of these ten counties San Francisco was the  
25 highest at 29.1%. Because private schools are not required to meet the stringent safety

1 requirements of public schools unless they are new buildings or have been extensively  
2 remodeled, the SSC found that they posed a greater risk in a future moderate or large  
3 earthquake if housed in older buildings. The SSC recommended that the seismic safety of  
4 California schools be rated so that parents can make informed decisions about their children's  
5 educational options.

6 (d) San Francisco's Community Action Plan for Seismic Safety and Earthquake Safety  
7 Implementation Program.

8 (1) On October 17, 2011, the Office of the Mayor released the first draft of the  
9 City's Earthquake Safety Implementation Program (ESIP), which is a 30-year Workplan to  
10 update building codes, retrofit privately-owned buildings, and prepare for post-disaster  
11 recovery that encompasses 50 objectives with the goal of making San Francisco as safe as it  
12 can be before the next earthquake hits.

13 (2) The ESIP Workplan is based upon, and incorporates the goals and  
14 recommendations of, the Community Action Plan for Seismic Safety (CAPSS) that was  
15 unanimously endorsed in December 2010 by an advisory group of over sixty representative  
16 stakeholders, community leaders, professional experts, and City officials. The CAPSS  
17 program was developed over a ten-year period, resulting in agreement upon acceptable  
18 earthquake impacts for San Francisco and, through dozens of meetings and workshops,  
19 development of a plan to achieve the City's resilience goals.

20 (3) The CAPSS recommendations coordinate with the proposed goals and  
21 policies of the Resilient City initiative, a multi-year study program by San Francisco Planning  
22 and Urban Research Association's (SPUR), as well as the Planning Department's Community  
23 Safety Element and the City's Hazard Mitigation Plan.

24 (e) The first legislative enactment under the ESIP was an ordinance mandating the  
25 seismic retrofit of certain wood-frame buildings in San Francisco, which was finally passed by



1 the Board of Supervisors on April 9 and approved by the Mayor on April 18, 2013. The next  
2 category of buildings to be evaluated under the ESIP is private elementary and secondary (K-  
3 12) schools.

4 (f) San Francisco has the highest percentage of children attending private schools in  
5 the State of California. Because private schools are not required to meet the same standards  
6 as public schools unless they are new buildings or have been extensively remodeled, the  
7 public's expectation of their seismic performance does not reflect the reality of their safety.  
8 Since the collapse or extensive damage to even a few schools is an unacceptable risk, it is  
9 essential that all private schools be evaluated to assess their ability to perform in an  
10 earthquake.

11 (g) A Private Schools Earthquake Working Group was formed under the ESIP to study  
12 the issue of the seismic safety of private schools in San Francisco. It met for over a year, with  
13 publicly-noticed open meetings. A special effort was made to encourage private school  
14 representatives to attend these meetings. The Working Group found that:

15 (1) while San Francisco's private school buildings appear to have approximately  
16 double the risk of the City's public school buildings in future earthquakes, 43% of them have  
17 characteristics that indicate they are likely to perform well in future earthquakes;

18 (2) 33% of the City's private school buildings have characteristics that indicate  
19 they might perform poorly in future earthquakes; and

20 (3) for 24% of the City's private school buildings, there was not enough  
21 information to determine their likely seismic performance in future earthquakes.

22 (h) As the next phase in the City's implementation of its program for earthquake  
23 preparedness and post-earthquake resilience, this ordinance mandates that all private K-12  
24 schools in San Francisco obtain an evaluation of structural safety and be rated for  
25 performance during a future earthquake.

1 Section 4. The Building Code is hereby amended by adding Section 3428, to read as  
2 follows:

3 **Chapter 34**  
4 **EXISTING STRUCTURES**

5 \* \* \* \*

6 **SECTION 3428 – EARTHQUAKE EVALUATION OF PRIVATE SCHOOL STRUCTURES**

7  
8 **3428.1 General.** *Every building or structure containing classrooms, administrative offices, or other*  
9 *facilities incidental or accessory to elementary and secondary schools (K-12) that are not schools*  
10 *under the jurisdiction of the Office of State Architect’s Structural Safety section shall be evaluated in*  
11 *accordance with the provisions of this Section 3428.*

12 **Exceptions:**

13 1. Evaluation is not required for buildings that are less than 250 square feet in floor area or  
14 for which no building permit would be required for construction.

15 2. Evaluation is not required for buildings or structures used for homeschooling under the  
16 provisions of Section 33190 of the California Education Code.

17 These requirements are retroactive and shall apply to all buildings, structures, and non-building  
18 structures within the scope of this Section 3428 that are in existence as of the effective date of this Section 3428  
19 regardless of the date of construction. All evaluations required by this Section 3438 shall be conducted  
20 under the supervision of a licensed structural engineer.

21  
22 **3428.2 Scope and Criteria.** *Each building, structure, and non-building structure such as fences,*  
23 *retaining walls, patio covers, and covered walkways shall be evaluated using ASCE 41-13 with the*  
24 *evaluation objective given in Table 3428.2 as required by Section 3428.2.1 or 3428.2.2.*

**Table 3428.2. ASCE 41-13 Evaluation Objectives and Scopes<sup>1</sup>**

<b><u>Evaluation type</u></b>	<b><u>Evaluation Objective/ Scope</u></b>
<b><u>Safety Evaluation</u></b>	<b><u>Structural Life Safety with the BSE-1E hazard</u></b> <b><u>Nonstructural Life Safety with the BSE-1E hazard</u></b>
<b><u>Recovery Evaluation</u></b>	<b><u>Immediate Occupancy with the BSE-1E hazard</u></b> <b><u>Nonstructural Position Retention with the BSE-1E hazard</u></b>

<sup>1</sup> As modified and interpreted by an Administrative Bulletin to be adopted by the Department.

**3428.2.1 Safety Evaluation.** Every building, structure, and non-building structure shall be subject to a Safety Evaluation, except for those buildings subject to a Recovery Evaluation.

**3428.2.2 Recovery Evaluation.** Each school within the scope of this Section 3428 in which K-12 enrollment for the 2013-2014 school year, or the average K-12 enrollment for the 2011-12 through 2013-14 school years, exceeded 225 students shall be subject to a Recovery Evaluation.

**3428.2.3 Schedule for Evaluations.** Within one year of the effective date of Section 3428, an Evaluation Scope document shall be submitted to the Department listing each structure to be evaluated, the evaluation objective to be applied, and other information requested by the Department.

**3428.4 Evaluation Report; Reporting Requirements.** Within 120 days of completion of an evaluation, and in no case later than three years of the effective date of Section 3428, the structural engineer performing the evaluation shall submit an Evaluation Report to both the building owner and the Department. The Evaluation Report shall conform to content and format requirements provided in an Administrative Bulletin to be adopted by the Department. The City shall report to the public all

1 information gathered during this process and shall provide a summary of these evaluations to the  
2 public.

3  
4 **3428.5 Outreach and Assistance by the City.** The City shall develop an outreach program focused on  
5 identifying resources, providing technical information, and assisting schools to comply with these  
6 requirements.

7  
8 **3428.6 Enforcement.** Buildings, structures, or non-building structures in violation of this Section 3428  
9 may be considered to be unsafe. The Department may apply the provisions of Section 102A, including  
10 102A.13, Repair and Demolition Fund, in remedying such unsafe conditions. Enforcement action may  
11 be initiated by the Department for failure to comply with any of the requirements of Section 3428,  
12 including failure to submit an Evaluation Scope document or Evaluation Report within the time  
13 designated.

14  
15 **3428.7 Fees.** Fees based on standard hourly rates in accordance with the SFBC Table 1-A-D –  
16 Standard Hourly Rates shall be charged to compensate the Department for review and for related  
17 evaluation processing.

18  
19 Section 5. The Building Code is hereby amended by amending Section 3408.4.1, to  
20 read as follows:

21 3408.4.1 Change of occupancy. In addition to the other requirements of this code, the  
22 term “comply with the requirements of this code for such division or group of occupancy,” as  
23 used in this section, shall also mean compliance with the lateral force provisions of Section  
24 3401.10 when the change results in an increase of more than 10 percent in the occupant load  
25 of the entire building or structure, and which also increases the occupant load by more than

1 100 persons as compared to the occupant load of the existing legal use or the use for which  
2 the building was originally designed. A building changing occupancy to an E occupancy shall  
3 comply with Section 3428.  
4

5 Section 6. Effective Date. This ordinance shall become effective 30 days after  
6 enactment. Enactment occurs when the Mayor signs the ordinance, the Mayor returns the  
7 ordinance unsigned or does not sign the ordinance within ten days of receiving it, or the Board  
8 of Supervisors overrides the Mayor's veto of the ordinance.  
9

10 Section 7. Directions to Clerk. The Clerk of the Board of Supervisors is hereby directed  
11 to forward a copy of this ordinance to the California Building Standards Commission upon final  
12 passage.  
13

14 APPROVED AS TO FORM:  
15 DENNIS J. HERRERA, City Attorney

16 By: \_\_\_\_\_  
17 JUDITH A. BOYAJIAN  
18 Deputy City Attorney

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24  
25



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STRUCTURAL ENGINEERS  
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November 11, 2013

***RE: SEAU Position Statement Regarding the Acceptance of Adhesive Concrete Anchors under the Provisions of the 2012 IBC***

**Position Statement:**

It is acceptable to use adhesive anchors previously approved for the 2009 International Building Code (IBC) for the 2012 IBC until at least two independent adhesive anchor manufacturers demonstrate compliance with the new 2012 IBC criteria, or until the next edition of the IBC is adopted by the state of Utah (at which time the conditions of acceptance should be re-evaluated).

**Reasoning for Statement:**

There are currently no adhesives available that are approved for use under the new testing standards referenced in the 2012 IBC. ACI 318-11, as referenced in the 2012 IBC, now references the new testing standard for adhesive anchors, ACI 355.4 (wherein the acceptance criteria for testing adhesive anchors has now been codified). Prior to publishing ACI 318-11, the industry standard for testing and accepting adhesive anchors in concrete was AC-308, developed by the International Code Council Evaluation Services (ICC-ES). AC-308 was recently modified to reflect the new requirements of ACI 355.4 and was not made available to adhesive anchor manufacturers until June 2013. This has caused a delay in the ability of adhesive manufacturers to re-test their products under the new requirements of AC-308. As a result, adhesive anchors do not currently comply with all the requirements of ACI 355.4 and the 2012 IBC.

It is recognized that the new testing criteria for adhesive anchors based on ACI 355.4 may impact the current published capacities of adhesive anchors. However, until testing is complete, it is unknown how much the anchor capacities will be affected. It is anticipated that testing of adhesive anchors by the manufacturer and the subsequent review by ICC-ES may not be completed until January 2015. Therefore, based on the successful use of adhesive anchors under the 2009 IBC, it is proposed that 2009 IBC approved anchors be used in the interim. Additionally, in order to maintain some level of competition in the marketplace, it is also proposed that the 2009 IBC approved anchors be used until at least two adhesive anchor manufacturers have completed the new testing requirements and have published the revised capacities of their adhesive anchors based on the 2012 IBC.

## MEMORANDUM

**TO:** Steve Harris, Chair, Structural Subcommittee, SF BIC Code Advisory Committee  
**CC:** Patrick Otellini, ESIP; Robert Chun, DBI  
**FROM:** David Bonowitz  
**DATE:** November 12, 2013  
**SUBJECT:** Interpretation of SFBC Section 3402B, Exception 1

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As we discussed at the CAC Structural Subcommittee this morning, we can expect some questions about how Section 3402B Exception 1 will be implemented. The questions involve the application of Section 1604.11, which Exception 1 uses to check eligibility. Incidentally, since Section 1604.11 is also cited by AB-094, resolution of the issues discussed here could have a useful impact on voluntary seismic work as well.

### BACKGROUND

SFBC Section 3402B Exception 1 reads as follows:

A building that has been seismically strengthened to meet or exceed the standards of Section 1604.11 of this Code or its predecessor provisions within 15 years prior to the operative date of this Chapter is exempt from this Chapter upon the submittal of documentation showing that such work was properly permitted, completed, and maintained as required by this Code, and that the Department has approved such documentation.

The exception exempts eligible buildings based on recent permit and construction records, following the 15-year rule from Ordinance 54-10 (which created AB-094). The intent is clearly to relieve owners of the expense of hiring an engineer to produce new calculations or over-stamp old ones.

To qualify for the exemption, Exception 1 applies SFBC Section 1604.11, the city's traditional standard for triggered retrofit. This differs from the new standards now being applied to other buildings covered by Chapter 34B. While the older standard acknowledges the criteria used for past retrofits, it is not always clear how those criteria apply to existing buildings. Specifically, Section 1604.11 references CBC Section 1613, the earthquake design provisions for new buildings, which in turn references ASCE 7. If enforced to the letter, 1604.11 could involve wind design, nonstructural bracing, and retrofit of upper stories, which are beyond the intent of Chapter 34B, as well as other provisions recognized by SEAONC as inappropriate for existing buildings.

### RECOMMENDATION

DBI might already have a set of interpretations that it applies when Section 1604.11 is triggered. Even if such guidelines exist, however, it is unclear how they might apply to past voluntary work or to Exception 1. Therefore, I recommend that DBI should develop a new Administrative Bulletin (or material to supplement AB-107) to clarify how Section 1604.11 will be enforced.

The purpose of the new AB would be to address ambiguities in the current code language so as to ensure consistent enforcement in line with the intent of Section 3402B Exception 1.

### ISSUES

Following is my personal commentary on Section 1604.11 as it might apply to Chapter 34B, along with some options for resolving each issue. Again, the purpose is not to produce new regulations but to select the option that best represents the intent of the legislation. To that end, my general recommendation is: *A building should be exempt under Section 3402B Exception 1 if its target stories were structurally retrofitted within the past 15 years using criteria that matched conventional practices and code-based procedures in place at the time.*

## MEMORANDUM

(Exception 1 refers to Section 1604.11 “or its predecessor provisions,” meaning the old section 104(f). Thus, a full review of the exception might need to review SFBC code language back to 1998. Here, for simplicity, I consider only the current version.)

### **1604.11 Minimum lateral force for existing buildings.**

**1604.11.1 General.** This section is applicable to existing buildings when invoked by Section 3401.10. This section may be used as a standard for voluntary upgrades.

*Section 3401.10 simply points back to Section 1604.11 when seismic upgrade is triggered by a horizontal addition, an alteration, or a change of occupancy. Previous retrofits that might be eligible for Section 3402B Exception 1 might have been triggered but are more likely to have been voluntary. Despite the second sentence allowing the use of Section 1604.11, it is more likely that a voluntary retrofit would not have cited Section 1604.11 specifically in its permit application, because in most cases there would have been no incentive to do so. Implementation of Section 1604.11 for purposes of Exception 1 should bear this in mind; a previous retrofit might have complied with Section 1604.11, but the documentation probably did not call out that compliance explicitly. Therefore, to require clear documentation of intentional compliance might impose a burden not intended by Exception 1. Options:*

- *Allow record documents to qualify for exemption under Section 3402B Exception 1 only when they explicitly cite Section 1604.11 as design criteria.*
- *Allow record documents to qualify for exemption under Section 3402B Exception 1 when, in the judgment of the code official, they indicate, explicitly or not, compliance with the basic intent of Section 1604.11.*

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 May 21, 1973, 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.

*The “1973” allowance means that a retrofit completed in, say, 1999, need only to have applied the 1973 UBC in order to be exempt from Chapter 34B. In addition to allowing obsolete criteria (that miss, for example, important changes to wood-frame sheathing and steel moment frame provisions made after Northridge), the 1973 allowance sets up a conflict with Chapter 34B. Chapter 34B requires retrofit of pre-1978 buildings, but this allowance would treat certain pre-1978 designs as acceptable. Options:*

- *Allow the 1973 allowance as written, and ignore the apparent conflict.*
- *Disallow the 1973 allowance when Section 1604.11 is used to comply with Section 3402B Exception 1.*
- *Change Section 1604.11 to set a later “deemed to comply” date (related to the 1997 UBC, perhaps) when this section is used to comply with Section 3402B Exception 1.*
- *Change Section 1604.11 to set a later “deemed to comply” date whenever this section is used.*

**1604.11.2 Wind forces.** Buildings and structures shall be capable of resisting wind forces as prescribed in Section 1609.

*Completion of a wind analysis or retrofit is outside the intended scope of Chapter 34B. Options:*

- *Waive Section 1604.11.2 when Section 1604.11 is used to comply with Section 3402B Exception 1.*
- *Require a demonstration of compliance with Section 1604.11.2 as written.*
- *Require a demonstration of compliance with Section 1604.11.2, but only in the retrofitted story, consistent with the intent stated in Section 3401B.*



## MEMORANDUM

**1604.11.3 Seismic forces.** Buildings and structures shall comply with the applicable provisions of Sections [sic] 1613, except that, when compliance with this section is required by Section 3401.10, then structures and elements may be designed for seismic forces of not less than 75 percent of those given in Section 1613, and the building separation limitations of Section 1613.8 do not apply.

*Use of contemporary code.* As written, references to Section 1613 suggest the latest edition of the SFBC. This is appropriate when Section 1604.11 is invoked on a current project. But Section 3402B Exception 1 probably should not be interpreted to mean that a past retrofit must now be checked against current code provisions. Rather, the reference to “predecessor provisions” and the clause “was properly permitted” in Exception 1 indicate that the retrofit need only satisfy the versions of Section 1604.11 and Section 1613 that were in place at the time. Options:

- Assess the previous retrofit relative to current provisions in Section 1613.
- Assess the previous retrofit relative to the provisions in place at the time of the retrofit design that correspond to those now in Section 1613, even if the scope of the older provisions was different.

*Scope of seismic retrofit design.* Section 1613 contains some of the provisions needed for earthquake design of new buildings; it references the standard known as ASCE 7, which contains provisions for selecting and checking the overall seismic force-resisting system. Thus, while Section 1613 is titled “Earthquake Loads,” the phrase “shall comply with the applicable provisions of Section 1613” should probably be understood to mean more than just the loads. Still, it seems unreasonable to think that Section 1604.11 (let alone Section 3402B Exception 1) intended an existing building to be checked or retrofitted top to bottom using every provision that applies to the design of new buildings. For one thing, Section 1613 and ASCE 7 require bracing and anchorage of nonstructural components; probably that is never required when 1604.11 is triggered by other SFBC provisions. For another, Section 1613 and ASCE 7 require consideration of the entire structure; applied to past voluntary retrofits of so-called “soft story” buildings, this would effectively negate any benefit of Section 3402B Exception 1. It is possible that DBI has already developed guidelines for applying Section 1613 to existing buildings. If so, those guidelines could represent at least a first draft of the recommended AB. In addition, since IEBC Chapter A4 is essentially a code-based procedure tailored to “soft story” buildings, its basic scope could be used to check the completeness of a previous retrofit.

Options: Exempt previous retrofits under Section 3402B Exception 1 when the submitted documentation demonstrates compliance with:

- Every provision in Section 1613 and its reference standards.
- Only those provisions of Section 1613 and its reference standards that DBI normally requires when Section 1604.11 is invoked for triggered retrofits. (Current DBI standard procedures should be documented in an AB if not already documented.)
- Only those provisions of Section 1613 and its reference standards that a) DBI normally requires when Section 1604.11 is invoked for triggered retrofits, and b) are commensurate with the intent of Section 3401B. In particular, compliance with Section 1613 should only be required for the seismic force-resisting system in the building’s target stories, together with load path components between the diaphragm immediately above and the foundation.

Unless DBI procedures are already known and consistently enforced, development of an AB should perhaps involve a review of Section 1613 and ASCE 7 Chapters 11 and 12 to itemize those provisions that should and should not apply to Exception 1.

*Use of reduced seismic loads.* As written, the “75 percent” factor on seismic forces applies only when Section 1604.11 is referenced by Section 3401.10. Thus, the force reduction would not apply when this section is used to comply with Section 3402B Exception 1. This seems counter to the intent of Chapter 34B, especially considering that the criteria being applied to mandated retrofits (in Section 3406B.2) generally use “reduced” seismic loads. On the other hand, the

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*reduction is generally applied to current design loads; it should not be applied to design loads from previous “deemed to comply” codes that are already lower than current values. Whether to allow the factor for Exception 1 should probably depend on whether DBI has generally encouraged its use when Section 1604.11 has been used for voluntary retrofits. If most voluntary retrofits in the last 15 years have been using the reduction factor, application of Exception 1 should accommodate that practice. Options:*

- *Enforce the provision as written: Do not allow the 75 percent factor when Section 1604.11 is used to comply with Section 3402B Exception 1.*
- *Allow the 75 percent factor when Section 1604.11 is used to comply with Section 3402B Exception 1, if the retrofit design in question relied on it.*
- *Allow the 75 percent factor when Section 1604.11 is used to comply with Section 3402B Exception 1, but only when it is applied to current design loads.*

*Waiver of Section 1613.8. As written, the waiver of Section 1613.8 applies only when Section 1604.11 is referenced by Section 3401.10. Thus, it would not apply when this section is used to comply with Section 3402B Exception 1. However, it seems unlikely that any voluntary retrofit would have considered the building separation limits for new construction, so enforcing them now would effectively negate any benefit of Section 3402B Exception 1. Options:*

- *Enforce the provision as written: Do not waive Section 1613.8 when Section 1604.11 is used to comply with Section 3402B Exception 1.*
- *Allow the waiver of Section 1613.8 when Section 1604.11 is used to comply with Section 3402B Exception 1.*

When upper floors are exempted from compliance by Section 3401.10, the lateral forces generated by their masses shall be included in the analysis and design of the lateral force resisting systems for the strengthened floor. Such forces may be applied to the floor level immediately above the topmost strengthened floor and distributed in that floor in a manner consistent with the construction and layout of the exempted floor.

*As noted above, Section 3401.10 is merely a pointer from various upgrade triggers in Chapter 34 (not Chapter 34B) back to Section 1604.11. Therefore, this paragraph does not apply directly when Section 1604.11 is used to comply with Section 3402B Exception 1. Nevertheless, the notion that a “first story only” retrofit is sometimes acceptable under Section 1604.11 is consistent with the intent of Chapter 34B and the requirements of its compliance alternatives.*

In lieu of meeting the specific requirements of this section, an alternative lateral analysis procedure incorporating inelastic behavior may be submitted and approved in accordance with rules and regulations adopted by the Building Official pursuant to Section 104A.2.1.

*This paragraph is moot with respect to Section 3402B Exception 1, which intends to exempt certain buildings based on prior documentation and permit records without thorough vetting of calculations.*

**1604.11.4 Design values for existing materials.** The incorporation of existing materials, construction and detailing into the designed lateral force system shall be permitted when approved by the Building Official. Minimum quality levels and maximum load and stress values shall comply with Table 16C-D of this code, Tables 8-8-A and 8-8-B of the State Historical Building Code, or with other rules, regulations and standards adopted by the Building Official pursuant to Section 104A.2.1.

*This paragraph is moot with respect to Section 3402B Exception 1, which intends to exempt certain buildings based on prior documentation and permit records without thorough vetting of calculations.*