EB1–12
[B]301.1.4, [B]301.1.4.1, [B]Table 301.1.4.1, [B]301.1.4.2, [B]Table 301.1.4.2

Proponent: Jennifer Goupil, The Structural Engineering Institute of ASCE (jgoupil@asce.org)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 301.1.4 Evaluation and design procedures. The seismic evaluation and design shall be based on the procedures specified in the *International Building Code*~~, ASCE 31~~ or ASCE 41. The procedures contained in Appendix A of this code shall be permitted to be used as specified in Section 301.1.4.2.

[B] 301.1.4.1 Compliance with IBC level seismic forces. Where compliance with the seismic design provisions of the *International Building Code* is required, the procedures shall be in accordance with one of the following:

1. One-hundred percent of the values in the *International Building Code*. Where the existing seismic force-resisting system is a type that can be designated as "Ordinary," values of R, Ω_0 and C_d used for analysis in accordance with Chapter 16 of the *International Building Code* shall be those specified for structural systems classified as "Ordinary" in accordance with Table 12.2-1 of ASCE 7, unless it can be demonstrated that the structural system will provide performance equivalent to that of a "Detailed," "Intermediate" or "Special" system.
2. Compliance with the performance objectives in ASCE 41 ~~using both the BSE-1 and BSE-2 earthquake hazard levels and the corresponding performance levels shown in Table 301.1.4.1~~ Section 2.2.4 based on the assigned Risk Category for the building.

~~**[B] TABLE 301.1.4.1**~~
~~**PERFORMANCE CRITERIA FOR IBC—LEVEL SEISMIC FORCES OCCUPANCY**~~

[B] 301.1.4.2 Compliance with reduced IBC level seismic forces. Where seismic evaluation and design is permitted to meet reduced *International Building Code* seismic force levels, the procedures used shall be in accordance with one of the following:

1. The *International Building Code* using 75 percent of the prescribed forces. Values of R, Ω_0 and C_d used for analysis shall be as specified in Section 301.1.4.1 of this code.
2. Structures or portions of structures that comply with the requirements of the applicable chapter in Appendix A as specified in Items 2.1 through 2.5 and subject to the limitations of the respective Appendix Chapters shall be deemed to comply with this section.
    2.1. The seismic evaluation and design of unreinforced masonry bearing wall buildings in Risk Category I or II are permitted to be based on the procedures specified in Appendix Chapter A1.
    2.2. Seismic evaluation and design of the wall anchorage system in reinforced concrete and reinforced masonry wall buildings with flexible diaphragms in Risk Category I or II are permitted to be based on the procedures specified in Chapter A2.
    2.3. Seismic evaluation and design of cripple walls and sill plate anchorage in residential buildings of light-frame wood construction in Risk Category I or II are permitted to be based on the procedures specified in Chapter A3.
    2.4. Seismic evaluation and design of soft, weak, or open-front wall conditions in multiunit residential buildings of wood construction in Risk Category I or II are permitted to be based on the procedures specified in Chapter A4. 2.5. Seismic evaluation and design of concrete buildings in all risk categories are permitted to be based on the procedures specified in Chapter A5.

~~3. Compliance with ASCE 31 based on the applicable performance level as shown in Table 301.1.4.2. It shall be permitted to use the BSE-1 earthquake hazard level as defined in ASCE 41 and subject to the limitations in Item 4 below.~~

~~4.~~ 3. Compliance with the performance objectives in ASCE 41 ~~using the BSE-1 Earthquake Hazard Level and the performance level shown in Table 301.1.4.2. The design spectral response acceleration parameters S_{xs} and S_{x1} specified in ASCE 41 shall not be taken less than 75 percent of the respective design spectral response acceleration parameters S_{DS} and S_{D1} defined by the *International Building Code*~~ Section 2.2.1 based on the assigned Risk Category for the building.

~~**[B] TABLE 301.1.4.2**~~
~~**PERFORMANCE CRITERIA FOR REDUCED IBC—LEVEL SEISMIC FORCES RISK CATEGORY**~~

Reason: This proposal has two primary purposes:

1. Replace references to ASCE 31-03 and 41-06 with the updated standard ASCE 41-13, which combined 31 and 41 and contains numerous technical updates, representing the state of the practice for seismic evaluation and rehabilitation of existing buildings.
2. Remove IEBC Tables 301.1.4.1 and 301.1.4.2 and replace with a reference to the related sections of ASCE 41-13. The update standard contains performance objective criteria for both a new building standard equivalent level ("IBC-level seismic forces" in the IEBC), and a basic retrofit level ("reduced IBC-level seismic forces" in the IEBC).

Both of these purposes and a general summary of the changes associated with the new standard are presented below:

ASCE 41-13 Summary

ASCE 41-13 is the culmination of a multi-year, ANSI approved update process for the two seismic evaluation and rehabilitation standards promulgated by ASCE. There are several significant updates to the standards:

- ASCE 31-03 and 41-06 have been combined into one standard for improved consistency and usability. The primary features of the two standards have been maintained, including a three-tiered analysis approach; the use of simplified, experience-based approach for common building types; the use of advance analytical techniques for more complex or unusual buildings.
- Updated seismic hazard and performance objectives, including the addition of a "new building standard equivalent" performance and a change in the seismic hazard determination of the basic performance objective for existing buildings. The new building equivalent utilizes the same seismic hazards as ASCE 7-10. The existing building performance has removed the 0.75 factors on demands that has traditionally been used and instead uses reduced seismic hazards (see below for more detail). This approach is currently used for existing buildings in the 2007 California Building Code.
- Updated and revised checklists for the Tier 1 screening procedure that was in ASCE 31-03.
- Updated provisions for analysis, foundations, and the major materials chapters in ASCE 41-06 based on incorporation of research and practice since ASCE 41-06 was developed.

A public ballot version of the new standard will be available from ASCE in the spring of 2012 and it is expected that it a prepublication (white cover) version will be available prior to the ICC Final Action Hearings in October of 2012. Any person interested in obtaining a public comment copy of ASCE 41-13 may do so by contacting the proponent at jgoupil@asce.org.

Referencing ASCE 41-13 for Seismic Performance

It is our opinion that the table describing the ASCE 41 performance levels is best kept within the standard rather than defining force levels, performance objectives, and interpolation of acceptance criteria in the IEBC. This is consistent with how ASCE 7 works with the IBC. Namely, a building is assigned a Risk Category by the IBC, and then ASCE 7 defines the performance objective for that Risk Category. In ASCE 7 this is done via the seismic importance factor and other limitations contained in the standard. We propose the same method for the IEBC: Risk Category is assigned by the Code (in this case the IEBC), and associated seismic performance is specified by the referenced standard (ASCE 41-13).

Section 301.1.4.1 IBC Level Seismic Forces

This proposal removes the ASCE 41-06 performance levels from the IEBC and instead references a new section in ASCE 41-13 that contains criteria for "New Building Standards Equivalent Performance Objective." The objectives are similar to Table 301.1.4.1 in the 2012 IEBC and are intended to be generally consistent with the IBC and ASCE 7 as referenced in IEBC Section 301.1.4.1 Item 1.

Since ASCE 41-13 Section 2.2.4 addresses both structural and nonstructural items, the revised text references only the structural performance criteria consistent with Table 301.1.4.1 in the IEBC.

If kept within the IEBC, an updated version of Table 301.1.4.1 would be as follows:

TABLE 301.1.4.1

PERFORMANCE CRITERIA FOR IBC-LEVEL SEISMIC FORCES

RISK CATEGORY (BASED ON IBC TABLE 1604.5)	PERFORMANCE LEVEL FOR USE WITH ASCE 41 BSE-1N EARTHQUAKE HAZARD LEVEL	PERFORMANCE LEVEL FOR USE WITH ASCE 41 BSE-2N EARTHQUAKE HAZARD LEVEL
I	Life Safety ~~(LS)~~	Collapse Prevention ~~(CP)~~
II	Life Safety ~~(LS)~~	Collapse Prevention ~~(CP)~~

III	Damage Control ~~Note a~~	Limited Safety ~~Note a~~
IV	Immediate Occupancy ~~(IO)~~	Life Safety ~~(LS)~~

~~a. Acceptance criteria for Risk Category III shall be taken as 80 percent of the acceptance criteria specified for Risk Category II performance, but need not be less than the acceptance criteria specified for Risk Category IV performance levels.~~

Therefore, this part of the proposal effectively has two substantive revisions to the 2012 version of Table 301.1.4.1 based on the updates in ASCE 41-13:

1. BSE-1N and BSE-2N in ASCE 41-13 are similar to the BSE-1 and BSE-2 in ASCE 41-06 except that they are based on the MCE_R ground motions consistent with ASCE 7-10. In addition whereas the BSE-1 in ASCE 41-06 was taken as the lesser of 2/3MCE and earthquake exceedance probability of 10% in 50 years, the BSE-1N is defined as MCE_R without considering the earthquake exceedance probability of 10% in 50 years.
2. The interpolation for Risk Category III has been changed from 80% of Risk Category IV to halfway between Risk Category II and Risk Category IV based on the definitions of "Damage Control" and "Limited Safety" in ASCE 41-13. Based on review and modifications to the acceptance criteria during the development of ASCE 41-06, the halfway interpolation better reflects the intent of the ASCE 7-10 Importance Factors for Risk Category III. Note also that the halfway interpolation is consistent with how the IEBC treated Risk Category III prior to 2009.

Section 301.1.4.2 Reduced IBC Level Seismic Forces

This proposal removes the ASCE 41-06 performance levels from the IEBC and instead references the section in ASCE 41-13 that contains criteria for "Basic Performance Objective for Existing Buildings." The objectives are similar to Table 301.1.4.2 in the 2012 IEBC and are intended to be generally consistent with the traditional approach for reduced seismic forces (75% of new code).

Since ASCE 41-13 Section 2.2.1 addresses both structural and nonstructural items, the revised text references only the structural performance criteria consistent with Table 301.1.4.1 in the IEBC.

ASCE 41-13 contains a three-tiered approach with Tiers 1 and 2 taken from ASCE 31-03 and Tier 3 being the Systematic Method from ASCE 41-06. Therefore, effectively the methods in ASCE 41-13 as referenced in new Item 3 and the same as those referenced in 2012 IEBC Items 3 and 4.

If kept within the IEBC, an updated version of Table 301.1.4.1 would be as follows:

TABLE 301.1.4.2

PERFORMANCE CRITERIA FOR REDUCED IBC-LEVEL SEISMIC FORCES

RISK CATEGORY (BASED ON IBC TABLE 1604.5)	~~PERFORMANCE LEVEL FOR USE WITH ASCE 31~~	PERFORMANCE LEVEL FOR USE WITH ASCE 41 BSE-1 EARTHQUAKE HAZARD LEVEL
I	~~Life Safety (LS)~~	Life Safety ~~(LS)~~
II	~~Life Safety (LS)~~	Life Safety ~~(LS)~~
III	~~Note a~~	Damage Control Note a
IV	~~Immediate Occupancy (IO)~~	Immediate Occupancy ~~(IO)~~

a. For Risk Category III, the ASCE 41 Tier 1 Screening checklists shall be based on the Life Safety Performance Level, except that checklists statements using the Quick Check procedures of ASCE 41 Section 4.5.3 shall be to a demand to capacity ratio based on the average of the demand to applicable capacity ratio for Life Safety and Immediate Occupancy.

~~a. Acceptance criteria for Risk Category III shall be taken as 80 percent of the acceptance criteria specified for Risk Category II performance, but need not be less than the acceptance criteria specified for Risk Category IV performance levels.~~

~~b. For Risk Category III, the ASCE 31 screening phase checklists shall be based on the life safety performance level.~~

Therefore, this part of the proposal effectively has four substantive revisions:

1. The BSE-1E is a newly defined seismic hazard in ASCE 41-13 intended for the Basic Performance Objective for existing buildings. The hazard level is defined as an earthquake with a 20% exceedance probability in 50 years, which is generally consistent with a 10% in 50 year earthquake with the 0.75 factor that was built into the ASCE 31-03 methodology for seismic evaluation.
2. The interpolation for Risk Category III has been changed from 80% of Risk Category IV to halfway between Risk Category II and Risk Category IV based on the definitions of "Damage Control" in ASCE 41-13. Based on review and modifications to the acceptance criteria during the development of ASCE 41-06, the halfway interpolation better reflects the intent of the ASCE 7-10 Importance Factors for Risk Category III. Note also that the halfway interpolation is consistent with how the IEBC treated Risk Category III prior to 2009.
3. The performance objectives for the Tier 1 and Tier 2 procedures in ASCE 41-13 consists of a single check (one performance level and seismic hazard combination), consistent with ASCE 31-03 as referenced in the 2012 IEBC. Due to seismic hazard reduction (from 2/3 MCE to 20% in 50 year) combined with the elimination of the ASCE 31-03 0.75 factor, the effective performance objective for Tier 1 and Tier 2 is similar to what the 2012 IEBC Table 301.4.2 specifies for ASCE 31-03.
4. The performance objective for the Tier 3 procedure in ASCE 41-13 consists of a dual check (two performance level and seismic hazard combination), which differs from how the 2012 IEBC references ASCE 41-06. The inclusion of the second seismic hazard (BSE-2E defined as 5% in 50 year) is intended to offset the effect of the hazard reduction from the ASCE 41-06 BSE-1 (10% in 50 year) to the ASCE 41-13 BSE-1E (20% in 50 year). Therefore, the dual level check proposed is intended to be generally consistent with the single level check in 2012 IEBC Table 301.1.4.2.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: This code change proposal references ASCE standard 41, which is already referenced in this code. However, the proposed change to code text is written to correlate with a new edition of the standard ASCE 41-13, rather than the edition presently referenced in the code, which is the 06 edition. The 13 edition of this standard is not yet completed, published and available. The update to this standard will be considered by the Administrative Code Committee during the 2013 Code Development Cycle. Should this code change proposal be approved, but the update to the standard not be approved by the Administrative Code Committee, the code text will revert to the text as it appears in the 2012 Edition of the code. Additionally, if the standard update is approved but the document is not published and available by December 1, 2014, an errata will be issued to the code that will return the affected code text to the text as it appears in the 2012 edition of the code.

EB1-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

301.1.4-EB-GOUPIL.doc

EB2–12
[B]301.1.4, [B]301.1.5 (NEW), Chapter 16 (NEW)

Proponent: Matthew Senecal, P.E., American Concrete Institute

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 301.1.4 Seismic evaluation and design procedures. The seismic evaluation and design shall be based on the procedures specified in the *International Building Code*, ASCE 31 or ASCE 41. The procedures contained in Appendix A of this code shall be permitted to be used as specified in Section 301.1.4.2.

[B] 301.1.5 Concrete evaluation and design procedures. Non-seismic evaluation and design of structural concrete shall be in accordance with the requirements of ACI 562.

Add new standard to Chapter 16 as follows:

ACI

562-12 - Code Requirements for Evaluation, Repair, and Rehabilitation of Concrete Buildings

Reason: There are no general evaluation and design criteria for concrete structures in the IEBC. ASCE 31, ASCE 41, and Appendix A of this code provide direction for particular structural systems in high seismic areas. ACI 562 is a new referenced standard addressing non-seismic evaluation and design of concrete structures. ACI 562 is compatible with the principles of this code, ASCE 31, and ASCE 41.

Cost Impact: The code change proposal will set a minimum standard for the repair or rehabilitation of concrete structures; therefore, the cost of construction may increase or decrease depending on the standard of practice of the local jurisdiction.

Analysis: A review of the standard proposed for inclusion in the code ACI 562-12 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

EB2-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

301.1.4-EB-SENECAL.doc

EB3–12
[B]301.1.4.2, [B]A502.1

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 301.1.4.2 Compliance with reduced IBC level seismic forces. Where seismic evaluation and design is permitted to meet reduced *International Building Code* seismic force levels, the procedures used shall be in accordance with one of the following:

1. The *International Building Code* using 75 percent of the prescribed forces. Values of R, Ω_0 and C_d used for analysis shall be as specified in Section 301.1.4.1 of this code.
2. Structures or portions of structures that comply with the requirements of the applicable chapter in Appendix A as specified in Items 2.1 through 2.5 and subject to the limitations of the respective Appendix A Chapters shall be deemed to comply with this section.
    2.1. The seismic evaluation and design of unreinforced masonry bearing wall buildings in Risk Category I or II are permitted to be based on the procedures specified in Appendix Chapter A1.
    2.2. Seismic evaluation and design of the wall anchorage system in reinforced concrete and reinforced masonry wall buildings with flexible diaphragms in Risk Category I or II are permitted to be based on the procedures specified in Chapter A2.
    2.3. Seismic evaluation and design of cripple walls and sill plate anchorage in residential buildings of light-frame wood construction in Risk Category I or II are permitted to be based on the procedures specified in Chapter A3.
    2.4. Seismic evaluation and design of soft, weak, or open-front wall conditions in multiunit residential buildings of wood construction in Risk Category I or II are permitted to be based on the procedures specified in Chapter A4.
    2.5. Seismic evaluation and design of concrete buildings ~~in all risk categories are~~ <u>assigned to risk category I, II or III is</u> permitted to be based on the procedures specified in Chapter A5.
3. Compliance with ASCE 31 based on the applicable performance level as shown in Table 301.1.4.2. It shall be permitted to use the BSE-1 earthquake hazard level as defined in ASCE 41 and subject to the limitations in Item 4 below.
4. Compliance with ASCE 41 using the BSE-1 Earthquake Hazard Level and the performance level shown in Table 301.1.4.2. The design spectral response acceleration parameters S_{XS} and S_{X1} specified in ASCE 41 shall not be taken less than 75 percent of the respective design spectral response acceleration parameters S_{DS} and S_{D1} defined by the *International Building Code*.

Revise as follows:

[B] A502.1 Scope. The provisions of this chapter shall apply to all buildings having concrete floors or roofs supported by reinforced concrete walls or by concrete frames and columns. This chapter shall not apply to buildings with roof diaphragms that are defined as flexible diaphragms by the building code, and shall not apply to concrete frame buildings with masonry infilled walls. Buildings that were designed and constructed in accordance with the seismic provisions of the 1993 *BOCA National Building Code*, the 1994 *Standard Building Code*, the 1976 *Uniform Building Code*, the 2000 *International Building Code* or later editions of these codes shall be deemed to comply with these provisions, unless the seismicity of the region has increased since the design of the building.

Exception: This chapter shall not apply to ~~concrete~~ buildings ~~where Seismic Design Category A is permitted~~ assigned to risk category IV.

Reason: This proposal clarifies the eligibility of buildings to use Appendix Chapter A5, with coordinated revisions to Chapter 3 and Chapter A5. Two changes are proposed:

- Chapter A5 is intended to improve a building's performance with respect to safety but not necessarily with respect to post-earthquake functionality or recovery. As such, it is not appropriate for buildings assigned to risk category IV. The proposal makes appropriate revisions to Chapter 3 and Chapter A5.
- The current Chapter A5 text says the chapter does not "apply" to SDC A; commentary explains that this is based on the low seismicity associated with SDC A. There is no technical reason why the chapter's provisions cannot be used for these buildings, however, so that confusing "limitation" is removed.

Cost Impact: The code change proposal will not increase the cost of construction.

EB3-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

301.1.4.2-EB-BONOWITZ.doc

EB4–12
[B] 706.3.2

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 706.3.2 Roof diaphragms resisting wind loads in high-wind regions. Where roofing materials are removed from more than 50 percent of the roof diaphragm of a building or section of a building located where the ~~basic wind speed is greater than 90 mph~~ ultimate design wind speed is greater than 155 mph or in a special wind region, as defined in Section 1609 of the *International Building Code*, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to-wall connections shall be evaluated for the wind loads specified in the *International Building Code*, including wind uplift. If the diaphragms and connections in their current condition are not capable of resisting at least 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in the *International Building Code*.

Exception: One-and two-family dwellings need not be evaluated or strengthened.

Reason: This proposal corrects a printing error makes the following three changes:

- It makes the wind speed trigger less conservative, raising it from a BWS or nominal value of 90 mph to 120 mph. The current value (BWS = 90) is too low and has the effect of triggering retrofit work in many inland areas unnecessarily and without historical basis. BWS of 120 mph, or UDWS of 155 mph, is thought to be adequate, as it covers the critical coastal areas.
- It converts from the old Basic Wind Speed of 120 mph to the new mapped Ultimate Design Wind Speed of 155 mph, based on IBC Table 1609.3.1. This change is essentially administrative, for purposes of consistent terminology.
- It exempts houses. Many jurisdictions already cover houses with the IRC and exempt them entirely from IBC and IEBC provisions. In these cases the proposed exception makes no difference. Where the IBC or IEBC applies, this exception is considered prudent so as not to discourage very common and beneficial reroofing projects.

Note that by using a single wind speed value, the provision will now automatically cover different areas for buildings in different risk categories (see IBC Figures 1609A through 1609C). This is appropriate.

Finally, addition of the words “of a building” in the first sentence corrects what appears to be a printing error in the first printing of the 2012 IEBC. Those words were present in the 2009 edition and were not removed by any approved changes (though they were missing in the monographs from the last cycle). Ideally, this correction should be made through published errata.

Cost Impact: The code change proposal will not increase the cost of construction. Possible cost reduction.

EB4-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

706.3.2-EB-BONOWITZ.doc

EB5–12
[B] 706.3.2

Proponent: Gary J. Ehrlich, P.E., National Association of Home Builders (NAHB) (gehrlich@nahb.org)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 706.3.2 Roof diaphragms resisting wind loads in high-wind regions. Where roofing materials are removed from more than 50 percent of the roof diaphragm or section of a building located where the ~~basic~~ ultimate design wind speed V_{ult}, determined in accordance with Figure 1609A of the *International Building Code* is greater than ~~90~~ 115 mph or in a special wind region, as defined in Section 1609 of the *International Building Code*, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to-wall connections shall be evaluated for the wind loads specified in the *International Building Code*, including wind uplift. If the diaphragms and connections in their current condition are not capable of resisting at least 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in the *International Building Code*.

Reason: The purpose of this proposal is to correlate basic wind speed triggers in the IEBC with the IBC. The 2012 IBC adopted new ultimate-strength basis wind speed maps from ASCE 7-10. A conversion factor from the ultimate wind speed selected from the new maps (V_{ult}) down to the old allowable-stress level wind speed (V_{asd}) was introduced into the IBC to accommodate triggers for special requirements in high-wind regions, tables limiting the use of ballasted roofs at certain heights and wind speeds, and tables for proper selection of shingles and other roofing materials for wind resistance. Unfortunately, this conversion was not introduced into the IEBC, with the result that provisions which were supposed to apply only in high-wind regions now appear to apply across the entire United States. This proposal not only corrects this oversight, it fully updates the IEBC provisions to match the 2012 IBC and ASCE 7-10.

Cost Impact: The code change proposal will not increase the cost of construction.

EB5-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

706.3.2-EB-EHRLICH.doc

EB6–12
[B] 807.5, [IBC] 3404.4

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS IS A TWO PART CODE CHANGE. BOTH PARTS WILL BE HEARD BY THE IBC STRUCTURAL COMMITTEE AS TWO SEPARATE CODE CHANGES. SEE TENTATIVE HEARING ORDER FOR THIS COMMITTEE

PART I - IEBC

Revise as follows:

[B] 807.5 Existing structural elements resisting lateral loads. ~~*Alterations* affecting the demands or capacities of existing elements of the lateral load-resisting system shall be evaluated using the wind provisions of the *International Building Code* and the reduced IBC-level seismic forces. Any existing lateral load-resisting structural elements whose demand-capacity ratio with the *alteration* considered is more than 10 percent greater than its demand-capacity ratio with the alteration ignored shall be brought into compliance with those wind and seismic provisions. In addition, the *alteration* shall not create a structural irregularity prohibited by ASCE 7 unless the entire structure complies with Section 301.1.4.2. For the purposes of this section, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacity shall account for the cumulative effects of *additions* and *alterations* since the original construction.~~ Except as permitted by Section 807.6, where the alteration increases design lateral loads, or where the alteration results in prohibited structural irregularity as defined in ASCE 7, or where the alteration decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall be shown to meet the wind and seismic provisions of the *International Building Code*. Reduced IBC-level seismic forces shall be permitted.

> **Exception:** Any existing lateral load-carrying structural element whose demand-capacity ratio with the alteration considered is no more than 10 percent greater than its demand-capacity ratio with the alteration ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces per IBC Sections 1609 and 1613. Reduced IBC-level seismic forces shall be permitted. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces, and capacities shall account for the cumulative effects of additions and alterations since original construction.

PART II – IBC STRUCTURAL

Revise as follows:

3404.4 Existing structural elements carrying lateral load. Except as permitted by Section 3404.5, where the *alteration* increases design lateral loads in accordance with Section 1609 or 1613, or where the *alteration* results in a prohibited structural irregularity as defined in ASCE 7, or where the *alteration* decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall be shown to meet the requirements of Sections 1609 and 1613.

> **Exception:** Any existing lateral load-carrying structural element whose demand-capacity ratio with the *alteration* considered is no more than 10 percent greater than its demand-capacity ratio with the *alteration* ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces per Sections 1609 and 1613. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces, and capacities shall account for the cumulative effects of *additions* and *alterations* since original construction.

Reason: The proposal rewrites IEBC Section 807.5 using the clearer logic of IBC Section 3404.4. No change in scope or effect is intended. In applying the clearer wording, however, the scope of triggered work associated with the creation of a prohibited irregularity is slightly changed, from full compliance without exception to the usual compliance eligible for the 10 percent DCR exception. This is appropriate, and the resulting IEBC provision will be consistent with the corresponding IBC provision, except that the IEBC criteria will continue to allow the use of reduced seismic forces.

The proposal also modifies IBC Section 3404.4 for consistency by inserting the word “prohibited” in one place.

Cost Impact: The code change proposal will not increase the cost of construction.

EB6-12
PART I - IEBC

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

PART II - IBC

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

807.5-EB-BONOWITZ.doc

EB7–12
[B] 907.4.2

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 907.4.2 Substantial structural alteration. Where more than 30 percent of the total floor and roof areas of the building or structure have been or are proposed to be involved in structural *alteration* within a five-year period, the evaluation and analysis shall demonstrate that the lateral load resisting system of the altered building or structure complies with the *International Building Code* for wind loading and with reduced IBC-level seismic forces. The areas to be counted toward the 30 percent shall be those areas tributary to the vertical load-carrying components, such as joists, beams, columns, walls and other structural components that have been or will be removed, added or altered, as well as areas such as mezzanines, penthouses, roof structures and in-filled courts and shafts.

Reason: This proposal clarifies the long-standing intent of the IEBC that alteration-triggered structural upgrade applies to the (designated or *de facto*) lateral system only, and not to the gravity system or to nonstructural components.

Cost Impact: The code change proposal will not increase the cost of construction.

EB7-12

Public Hearing:	Committee:	AS	AM	D	
	Assembly:	ASF	AMF	DF	

907.4.2-EB-BONOWITZ.doc

EB8–12
[B] 907.4.2, [B] 907.4.3 (NEW), [B] 907.4.4

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 907.4.2 Substantial structural alteration. Where more than 30 percent of the total floor and roof areas of the building or structure have been or are proposed to be involved in structural *alteration* within a five-year period, the evaluation and analysis shall demonstrate that the lateral load-resisting system of the altered building or structure complies with the *International Building Code* for wind loading and with reduced IBC-level seismic forces. The areas to be counted toward the 30 percent shall be those areas tributary to the vertical load-carrying components, such as joists, beams, columns, walls and other structural components that have been or will be removed, added or altered, as well as areas such as mezzanines, penthouses, roof structures and in-filled courts and shafts.

[B]907.4.3 Seismic Design Category F. Where the building is assigned to seismic design category F, the evaluation and analysis shall demonstrate that the lateral load-resisting system of the altered building or structure complies with reduced IBC-level seismic forces and with the wind provisions applicable to a limited structural alteration.

~~**[B] 907.4.3**~~ **907.4.4 Limited structural alteration.** Where the work does not involve a substantial structural *alteration* and the building is not assigned to seismic design category F, the existing elements of the lateral load-resisting system shall comply with Section 807.5.

Reason: This proposal adds a new category of triggered seismic upgrade for the most vulnerable buildings undergoing Level 3 Alteration. Currently, alteration triggers seismic upgrade only when the alteration project makes intentional structural changes that add up to a "substantial structural alteration" (Section 907.4.2). A top-to-bottom architectural and mechanical renovation, however, triggers no seismic mitigation. This proposal fills some of that mitigation gap.

The proposal covers only buildings assigned to Seismic Design Category F. SDC F buildings are those in the highest seismicity *and* of the greatest importance to post-earthquake response and recovery (risk category IV). If any buildings are deserving of triggered upgrades when their lives are significantly extended through major alterations, these are. Many such buildings (California hospitals, for example) are already addressed by targeted legislation, so will not be affected by the proposed trigger. Yet many jurisdictions with substantial seismic risks do not have histories of proactive mitigation and lack the code mechanism to enforce these common-sense improvements to essential facilities. These jurisdictions look to the model codes for best practices.

The proposal borrows language and concepts, specifically the use of reduced loads, from the current trigger in Section 907.4.2. By limiting the scope and criteria, the proposal properly balances regulatory benefits with potential owner costs. (See also the Cost Impact statement below for mitigating factors.)

The proposal makes two associated revisions in addition to adding new Section 907.4.3:

- In Section 907.4.2, the long-standing intent that triggered upgrades address only structural systems and do not require nonstructural compliance is clarified by adding a few words.
- In current Section 907.4.3 (to be renumbered 907.4.4), reference to the proposed SDC F trigger is added to maintain the logical flow.

Cost Impact: Undetermined: Buildings assigned to SDC F that undergo Level 3 Alteration will be subject to seismic upgrade. However, 1) it is not known how many such buildings exist, 2) many such buildings already have made or would make seismic improvements voluntarily, especially as part of a major alteration, 3) many such buildings would pass the triggered evaluation anyway and would not entail any additional cost, and 4) owners can avoid the triggered work by limiting their scope of alteration.

EB8-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

907.4.3-EB-BONOWITZ.doc

EB9–12
[B] 907.4.4

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 907.4.4 Wall anchors for concrete and masonry buildings. For any building assigned to Seismic Design Category D, E or F with a structural system consisting of concrete or reinforced masonry walls with a flexible roof diaphragm ~~or~~ and any building assigned to Seismic Design Category C, D, E, or F with a structural system consisting of unreinforced masonry walls with any type of roof diaphragm, the alteration work shall include installation of wall anchors at the roof line to resist the reduced IBC-level seismic forces, unless an evaluation demonstrates compliance of existing wall anchorage.

Reason: This proposal extends a common-sense seismic mitigation provision from SDC D-F into SDC C.

The proposal is motivated by damage patterns observed throughout the east coast from the 2011 Virginia earthquake and by the recognition that most jurisdictions where SDC C is prevalent do not have histories of proactive mitigation. Rather, they look to the model codes for best practices. This proposal is modeled on successful practice in Massachusetts, an SDC C jurisdiction that *has* been proactive regarding mitigation and adaptive reuse of unreinforced masonry buildings.

The proposal does represent an increase in potentially triggered work, but the increase is measured and prudent. The proposal only applies to URM bearing walls. A lack of roof-to-wall anchors, especially when paired with unbraced URM parapets, poses a remaining risk throughout areas of moderate and high seismicity. Also the proposal is only triggered by Level 3 Alterations where the intended work area already exceeds 50 percent of the building. The triggered wall anchorage represents a small additional cost by comparison, and one that makes sense where significant resources are being spent to modernize a URM building.

Cost Impact: URM buildings assigned to SDC C that undergo Level 3 Alteration will require wall anchors. The cost is considered small compared with the typical cost of a Level 3 Alteration.

EB9-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

907.4.4-EB-BONOWITZ.doc

EB10–12
[B] 907.4.5

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 907.4.5 Bracing for unreinforced masonry parapets. Parapets constructed of unreinforced masonry in buildings assigned to Seismic Design Category C, D, E or F shall have bracing installed as needed to resist the reduced IBC-level seismic forces, unless an evaluation demonstrates compliance of such items.

Reason: This proposal extends a common-sense seismic mitigation provision from SDC D-F into SDC C.

The proposal is motivated by damage patterns observed throughout the east coast from the 2011 Virginia earthquake and by the recognition that most jurisdictions where SDC C is prevalent do not have histories of proactive mitigation. Rather, they look to the model codes for best practices. This proposal is modeled on successful practice in Massachusetts, an SDC C jurisdiction that *has* been proactive regarding mitigation and adaptive reuse of unreinforced masonry buildings.

The proposal does represent an increase in potentially triggered work, but the increase is measured, prudent, and cost-effective:

- The proposal only applies to URM parapets. Unbraced URM parapets remain the most widespread, vulnerable, and dangerous structural elements in earthquakes, as we have seen in several recent non-California events, including Virginia, Wells, NV, and Christchurch, NZ.
- Parapet bracing has a long history and is effective. Los Angeles required URM parapet bracing in 1949.
- Parapet bracing is not intrusive, as it can be done from outside the building.
- The proposal is only triggered by Level 3 Alterations where the intended work area already exceeds 50 percent of the building. The triggered parapet bracing represents a small additional cost by comparison, and one that makes sense where significant resources are being spent to modernize a URM building.

Cost Impact: Minor: URM buildings assigned to SDC C that undergo Level 3 Alteration will become subject to parapet bracing. The cost of parapet bracing is small compared with the typical cost of a Level 3 Alteration.

EB10-12

Public Hearing:				
Committee:	AS	AM	D	
Assembly:	ASF	AMF	DF	

907.4.5-EB-BONOWITZ.doc

EB11–12
[B] 1007.3.1

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 1007.3.1 Compliance with the *International Building Code* level seismic forces. Where a building or portion thereof is subject to a *change of occupancy* that results in the building being assigned to a higher risk category based on Table 1604.5 of the *International Building Code*; or where such *change of occupancy* results in a reclassification of a building to a higher hazard category as shown in Table 1012.4; or where a change of a Group M occupancy to a Group A, E, I-1, R-1, R-2 or R-4 occupancy with two-thirds or more of the floors involved in Level 3 *alteration* work, the building shall comply with the requirements for *International Building Code* level seismic forces as specified in Section 301.1.4.1 for the new risk category.

Exceptions:

1. ~~Group M~~ Any occupancies being changed to Group A, E, I-1, M, R-1, R-2 or R-4 occupancies without an increase in risk category, for buildings less than six stories in height ~~and in~~ assigned to Seismic Design Category A, B or C.
2. Where approved by the *code official*, specific detailing provisions required for a new structure are not required to be met where it can be shown that an equivalent level of performance and seismic safety is obtained for the applicable risk category based on the provision for reduced *International Building Code* level seismic forces as specified in Section 301.1.4.2.
3. Where the area of the new occupancy with a higher hazard category is less than or equal to 10 percent of the total building floor area and the new occupancy is not classified as Risk Category IV. For the purposes of this exception, buildings occupied by two or more occupancies not included in the same Risk category, shall be subject to the provisions of Section 1604.5.1 of the *International Building Code*. The cumulative effect of the area of occupancy changes shall be considered for the purposes of this exception.
4. Unreinforced masonry bearing wall buildings in Risk Category III when assigned to Seismic Design Category A or B shall be allowed to be strengthened to meet the requirements of Appendix Chapter A1 of this code [Guidelines for the Seismic Retrofit of Existing Buildings (GSREB)].

Reason: This proposal extends the seismic upgrade waiver currently provided in Exception 1.

Currently, Section 1007.3.1 triggers seismic upgrade for certain changes of occupancy from one “hazard category” to another, defined by Table 1012.4. It makes special provisions, both in the triggers and the exceptions, for Group M buildings. In particular, Exception 1 waives the upgrade requirement for certain changes from Group M within hazard category 3, presumably based on the relative seismic risk of the different HC 3 occupancies. But the hazard categories are defined in terms of egress, and there really is no rational basis in seismic terms for singling out Mercantile occupancies. Any seismic risk posed (or avoided) by a Group M building is certainly also posed (or avoided) by many Group B, F, S, U, or R-3 buildings, but the latter group are all assigned to HC 4 and are therefore targeted for seismic upgrades in ways that Group M buildings are not. This does not make sense, and it has the effect of discouraging beneficial adaptive reuse projects for existing Group B and F buildings.

The proposal therefore extends the Exception 1 waiver to other occupancies regardless of their hazard category. The provisos regarding building height and SDC remain, so only relatively low risk buildings are getting a new waiver. Also, if the Risk Category changes, the waiver does not apply.

Note that even under this proposal, Section 1007.3.1 will remain more conservative with respect to seismic upgrade triggers than IBC Section 3408, which triggers seismic upgrade only for a change in risk category, regardless of occupancy group.

Cost Impact: The code change proposal will not increase the cost of construction.

EB12–12
[B]1103.3

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 1103.3 Lateral force-resisting system. The lateral force-resisting system of *existing buildings* to which additions are made shall comply with Sections 1103.3.1, 1103.3.2 and 1103.3.3.

Exceptions:

1. Buildings of Group R occupancy with no more than five dwelling or sleeping units used solely for residential purposes where the *existing building* and the *addition* comply with the conventional light-frame construction methods of the *International Building Code* or the provisions of the *International Residential Code*.
2. ~~In other *existing buildings* where the lateral-force story shear in any story is not increased by more than 10 percent cumulative~~.

2. Any existing lateral load-carrying structural element whose demand-capacity ratio with the *addition* considered is no more than 10 percent greater than its demand-capacity ratio with the *addition* ignored shall be permitted to remain unaltered. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces, and capacities shall account for the cumulative effects of additions and alterations since original construction.

Reason: The proposal follows the precedent set in the 2006 IBC, making the exception to lateral system upgrade element-based, as opposed to story-based. The intent is that elements triggered for lateral upgrade by Section 1103.3.1 or 1103.3.2 should be exempt based on their individual demand-capacity ratios, not on the overall story shear. A focus on story shear can miss critical individual elements in vertical additions and can be difficult to define in the case of horizontal additions. The language of the proposed exception is taken from IBC Section 3403.4.

Cost Impact: The code change proposal will not increase the cost of construction.

EB12-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

1103.3-EB-BONOWITZ.doc

EB13–12
[B] 1103.5

Proponent: John Ingargiola and Gregory Wilson, representing Department of Homeland Security, Federal Emergency Management Agency (john.ingargiola@dhs.gov, gregory.p.wilson@dhs.gov) and Rebecca Quinn, RCQuinn Consulting, Inc., representing Federal Emergency Management Agency (rcquinn@earthlink.net).

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] 1103.5 Flood hazard areas. *Additions* and foundations in *flood hazard areas* shall comply with the following requirements:

1. For horizontal *additions* that are structurally interconnected to the *existing building*:
   1.1. If the *addition* and all other proposed work, when combined, constitute *substantial improvement*, the *existing building* and the *addition* shall comply with Section 1612 of the *International Building Code*.
   1.2. If the *addition* constitutes *substantial improvement*, the *existing building* and the *addition* shall comply with Section 1612 of the *International Building Code*.
2. For horizontal *additions* that are not structurally interconnected to the *existing building*:
   2.1. The *addition* shall comply with Section 1612 of the *International Building Code*.
   2.2. If the *addition* and all other proposed work, when combined, constitute *substantial improvement*, the *existing building* and the *addition* shall comply with Section 1612 of the *International Building Code*.
3. For vertical additions and all other proposed work that, when combined, constitute *substantial improvement*, the *existing building* shall comply with Section 1612 of the *International Building Code*.
4. For a ~~new, replacement,~~ raised~~,~~ or extended foundation, if the foundation work and all other proposed work, when combined, constitute *substantial improvement*, the *existing building* shall comply with Section 1612 of the *International Building Code.*
5. For a new foundation or replacement foundation, the foundation shall comply with Section 1612 the *International Building Code*.

Reason: New foundations and replacement foundations are new structures and should comply with the code requirements for new structures rather than be treated the same as raised/extended foundations. The situation with a new or replacement foundation is similar to relocated or moved buildings which are covered by Chapter 13. Section 1302.6 requires the foundations for moved or relocated buildings to comply with the requirements for new structures.

Cost Impact: This provision applies to projects that already propose to build a new foundation or a replacement foundation. Because new and replacement foundations should already be considered new structures, there shouldn't be any increase in cost. However, given how the existing language is written, there will be a cost increase only for those foundations that would not have been determined to be substantial improvement.

EB13-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

1103.5-EB-INGARGIOLA-WILSON-QUINN.doc

EB14–12
[B]1302.6

Proponent: John Ingargiola and Gregory Wilson, representing Department of Homeland Security, Federal Emergency Management Agency (john.ingargiola@dhs.gov, gregory.p.wilson@dhs.gov) and Rebecca Quinn, RCQuinn Consulting, Inc., representing Federal Emergency Management Agency (rcquinn@earthlink.net).

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B]1302.6 Flood hazard areas. If relocated or moved into a flood hazard area, structures shall comply with Section 1612 of the *International Building Code* or Section R322 of the *International Residential Code*, as applicable.

Reason: Section 1302.2 already specifies that the foundation system of relocated buildings shall comply with the IBC or IRC, as applicable. As currently written, Section 1302.6 does not allow use of the flood resistant requirements of the IRC. This proposal clarifies that the provisions of the International Residential Code may be used, if applicable to the occupancy.

Cost Impact: The cost for some residential foundations may be lower because the prescriptive provisions of the IRC can be used, rather than requiring a registered design professional for all foundation system for relocated homes.

EB14-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

1302.6-EB-INGARGIOLA-WILSON-QUINN.doc

EB15–12
[B]A103

Proponent: Marko Schotanus, Chair, Existing Buildings Committee, Structural Engineers Association of California (mschotanus@ruthchek.com)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

SECTION A103
DEFINITIONS

For the purpose of this chapter, the applicable definitions in the building code shall also apply.

[B] POINTING. The partial reconstruction of the ~~bed~~ joints of an unreinforced masonry wall as defined in UBC Standard 21-8.

Reason: Pointing is not limited to bed joints. The chapter provisions also intend that deterioration in head joints should be considered.

Cost Impact: The code change proposal will not increase the cost of construction.

EB15-12

Public Hearing:	Committee:	AS	AM	D	
	Assembly:	ASF	AMF	DF	

A103-POINTING-EB-SCHOTANUS.doc

EB16–12

[B] A105.3, [B] A107.3, [B] A107.4, [B] Table A1-E, [B]A107.5 (NEW), [B]A107.5.1 (NEW), [B]A107.5.2 (NEW), [B]A107.5.3 (NEW), [B]A107.5.4, [B]Chapter A6 (New)

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] A105.3 Requirements for plans. The following construction information shall be included in the plans required by this chapter:

1. Dimensioned floor and roof plans showing existing walls and the size and spacing of floor and roof-framing members and sheathing materials. The plans shall indicate all existing and new crosswalls and shear walls and their materials of construction. The location of these walls and their openings shall be fully dimensioned and drawn to scale on the plans.
2. Dimensioned wall elevations showing openings, piers, wall classes as defined in Section A106.3.3.8, thickness, heights, wall shear test locations, cracks or damaged portions requiring repairs, the general condition of the mortar joints, and if and where pointing is required. Where the exterior face is veneer, the type of veneer, its thickness and its bonding and/or ties to the structural wall masonry shall also be noted.
3. The type of interior wall and ceiling materials, and framing.
4. The extent and type of existing wall anchorage to floors and roof when used in the design.
5. The extent and type of parapet corrections that were previously performed, if any.
6. *Repair* details, if any, of cracked or damaged unreinforced masonry walls required to resist forces specified in this chapter.
7. All other plans, sections and details necessary to delineate required retrofit construction.
8. The design procedure used shall be stated on both the plans and the permit application.
9. Details of the anchor prequalification program required by ~~UBC Standard 21-7~~ Section A107.5.3, I f used, including location and results of all tests.

[B] A107.3 Existing wall anchors. Existing wall anchors used as all or part of the required tension anchors shall be tested in pullout according to ~~UBC Standard 21-7~~ Section A107.5.1. The minimum number of anchors tested shall be four per floor, with two tests at walls with joists framing into the wall and two tests at walls with joists parallel to the wall, but not less than 10 percent of the total number of existing tension anchors at each level.

[B] A107.4 New bolts. All new embedded bolts shall be subject to periodic special inspection in accordance with the building code, prior to placement of the bolt and grout or adhesive in the drilled hole. Five percent of all bolts that do not extend through the wall shall be subject to a direct-tension test, and an additional 20 percent shall be tested using a calibrated torque wrench. Testing shall be performed in accordance with ~~UBC Standard 21-7~~ Section A107.5. New bolts that extend through the wall with steel plates on the far side of the wall need not be tested.

> **Exception:** Special inspection in accordance with the building code may be provided during installation of new anchors in lieu of testing.

All new embedded bolts resisting tension forces or a combination of tension and shear forces shall be subject to periodic special inspection in accordance with the building code, prior to placement of the bolt and grout or adhesive in the drilled hole. Five percent of all bolts resisting tension forces shall be subject to a direct-tension test, and an additional 20 percent shall be tested using a calibrated torque wrench.

Testing shall be performed in accordance with ~~UBC Standard 21-7~~ Section A107.5. New through-bolts need not be tested.

[B] TABLE A1-E
STRENGTH VALUES OF NEW MATERIALS USED IN CONJUNCTION WITH EXISTING CONSTRUCTION

e. Other bolt sizes, values and installation methods may be used, provided a testing program is conducted in accordance with ~~UBC Standard 21-7~~ Section A107.5.3. The ~~useable~~ strength value shall be determined by multiplying the calculated allowable value, ~~as~~ determined ~~by UBC Standard 21-7~~ in accordance with Section A107.5.3, by 3.0, and the ~~useable~~ usable value shall be limited to a maximum of 1.5 times the value given in the table. Bolt spacing shall not exceed 6 feet (1829 mm) on center and shall not be less than 12 inches (305 mm) on center.

(Portions of Table not shown remain unchanged)

[B]A107.5 Tests of anchors in unreinforced masonry walls.

[B]A107.5.1 Direct tension testing of existing anchors and new bolts. The test apparatus shall be supported by the masonry wall. The distance between the anchor and the test apparatus support shall not be less than one half the wall thickness for existing anchors and 75 percent of the embedment for new embedded bolts. Existing wall anchors shall be given a preload of 300 pounds (1335 N) prior to establishing a datum for recording elongation. The tension test load reported shall be recorded at 1/8 inch (3.2 mm) relative movement between the existing anchor and the adjacent masonry surface. New embedded tension bolts shall be subject to a direct tension load of not less than 2.5 times the design load but not less than 1,500 pounds (6672 N) for five minutes (10 percent deviation).

[B]A107.5.2 Torque testing of new bolts. Bolts embedded in unreinforced masonry walls shall be tested using a torque-calibrated wrench to the following minimum torques:

1/2-inch-diamter (13 mm) bolts: 40 foot pounds (54.2 N-m)
5/8-inch-diamter (16 mm) bolts: 50 foot pounds (67.8 N-m)
3/4-inch-diamter (19 mm) bolts: 60 foot pounds (81.3 N-m)

[B]A107.5.3 Prequalification test for bolts and other types of anchors. This section is applicable when it is desired to use tension or shear values for anchors greater than those permitted by Table A1-E. The direct-tension test procedure set forth in Section A107.5.1 for existing anchors shall be used to determine the allowable tension values for new embedded through bolts, except that no preload is required. Bolts shall be installed in the same manner and using the same materials as will be used in the actual construction. A minimum of five tests for each bolt size and type shall be performed for each class of masonry in which they are proposed to be used. The allowable tension values for such anchors shall be the lesser of the average ultimate load divided by a factor of safety of 5.0 or the average load at which 1/8 inch (3.2 mm) elongation occurs for each size and type of bolt and class of masonry.

The test procedure for prequalification of shear bolts shall comply with ASTM E 488 or another approved procedure.

The allowable values determined in this manner shall be permitted to exceed those set forth in Table A1-E.

[B]A107.5.4 Reports. Results of all tests shall be reported. The report shall include the test results as related to anchor size and type, orientation of loading, details of the anchor installation and embedment, wall thickness, and joist orientation.

Add new standard to Chapter A6 as follows:

ASTM

E 488-10 Test Method for Strength of Anchors in Concrete and Masonry Elements

Reason: This proposal solves a problem caused by reference in the current provisions to an unavailable standard. Several sections and tables in Chapter A1 reference UBC Standard 21-7, but UBC Standards are no longer maintained and are not readily available. We know of no ICC-compliant standard for testing of existing and new wall anchors as needed by Appendix A1. Therefore, this proposal inserts the provisions from 1997 UBC Standard 21-7 in their entirety (with minor editorial changes) into a new Section A107.5.

The proposal also adds ASTM E 488 to IEBC Chapter A6. The 1990 edition of this standard was referenced in 1997 UBC Standard 21-7. This proposal updates that to the 2010 edition, as cited in proposed Section A107.5.3. A copy of the 2003 is being submitted separately for reference; the 2010 version is little-changed, and a copy will be provided prior to the hearings.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: A review of the standard proposed for inclusion in the code, ASTM E488-10 with regard to the ICC criteria for referenced standards (Section 3.6 of CP#28) will be posted on the ICC website on or before April 2, 2012.

EB16-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A105.3-EB-BONOWITZ.doc

EB17–12
[B] A106.2

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] A106.2 Existing materials. Existing materials used as part of the required vertical load-carrying or lateral force-resisting system shall be in sound condition, or shall be repaired or removed and replaced with new materials. All other unreinforced masonry materials shall comply with the following requirements:

1. The lay-up of the masonry units shall comply with Section A106.3.2, and the quality of bond between the units has been verified to the satisfaction of the building official;
2. Concrete masonry units are verified to be load-bearing units complying with ~~UBC Standard 21-4~~ ASTM C90 or such other standard as is acceptable to the building official; and
3. The compressive strength of plain concrete walls shall be determined based on cores taken from each class of concrete wall. The location and number of tests shall be the same as those prescribed for tensile-splitting strength tests in Sections A106.3.3.3 and A106.3.3.4, or in Section A108.1.

The use of materials not specified herein or in Section A108.1 shall be based on substantiating research data or engineering judgment, with the approval of the building official.

Reason: This proposal solves a problem caused by reference in the current provisions to an unavailable standard. Current Section A106.2 references UBC Standard 21-4, but UBC Standards are no longer maintained and are not readily available. 1997 UBC Standard 21-4 was already based on ASTM Standard Specification C90-95 with respect to hollow load-bearing concrete block. The latest version of C90 provides the data needed to determine what Appendix A1 requires: the net mortared area of hollow concrete block and the thickness of face shells of nominal widths. The proposal therefore references ASTM C90 in place of UBC Standard 21-4.

ASTM C90 is not a new IEBC reference standard, as it is already referenced in IEBC Section A505.2.3.

Cost Impact: The code change proposal will not increase the cost of construction.

EB17-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A106.2-EB-BONOWITZ.doc

EB18–12
[B] A106.3.2.1

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] A106.3.2.1 Multiwythe solid brick. The facing and backing shall be bonded so that not less than 10 percent of the exposed face area is composed of solid headers extending not less than 4 inches (102 mm) into the backing. The clear distance between adjacent full length headers shall not exceed 24 inches (610 mm) vertically or horizontally. Where the backing consists of two or more wythes, the headers shall extend not less than 4 inches (102 mm) into the most distant wythe, or the backing wythes shall be bonded together with separate headers with their area and spacing conforming to the foregoing. Wythes of walls not bonded as described above shall be considered veneer. Veneer wythes shall not be included in the effective thickness used in calculating the height-to-thickness ratio and the shear capacity of the wall.

> **Exception:** Where S_{D1} is not more than 0.3, veneer wythes anchored as specified in the building code and made composite with backup masonry may be used for calculation of the effective thickness~~, where *SD1* exceeds 0.3~~.

Reason: This proposal corrects a mistake made when references to Seismic Zones were removed in the 2006 I-codes. In the 2003 IEBC, this exception read, "In other than Seismic Zone 4, or where S_{D1} exceeds 0.3*g*, veneer wythes anchored as specified in the Building Code and made composite with backup masonry may be used for calculation of the effective thickness." The revision for 2006 intended to delete the reference Seismic Zone 4, but by striking only "In other than Seismic Zone 4," it changed the meaning to suggest that veneer may be counted as part of the masonry *only* in regions of high seismicity, when just the opposite is intended. This proposal corrects the provision and restores the intended meaning.

Cost Impact: The code change proposal will not increase the cost of construction.

EB18-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A106.3.2.1-EB-BONOWITZ.doc

EB19–12
[B]A104, [B]A106.3.3.1

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B]SECTION A104
SYMBOLS AND NOTATIONS

For the purpose of this chapter, the following notations supplement the applicable symbols and notations in the building code.

V_{test} = Load at incipient cracking for each in-place shear test ~~per UBC Standard 21-6~~ performed in accordance with Section A106.3.3.1, pounds (kN).

(No change to notations not shown)

[B] A106.3.3.1 Mortar tests. The quality of mortar in all masonry walls shall be determined by performing in-place shear tests in accordance with the following:

1. The bed joints of the outer wythe of the masonry ~~should~~ shall be tested in shear by laterally displacing a single brick relative to the adjacent bricks in the same wythe. The head joint opposite the loaded end of the test brick ~~should~~ shall be carefully excavated and cleared. The brick adjacent to the loaded end of the test brick ~~should~~ shall be carefully removed by sawing or drilling and excavating to provide space for a hydraulic ram and steel loading blocks. Steel blocks, the size of the end of the brick, ~~should~~ shall be used on each end of the ram to distribute the load to the brick. The blocks ~~should~~ shall not contact the mortar joints. The load ~~should~~ shall be applied horizontally, in the plane of the wythe. The load recorded at first movement of the test brick as indicated by spalling of the face of the mortar bed joints is V_{test} in Equation A1-3.
2. Alternative procedures for testing shall be used where in-place testing is not practical because of crushing or other failure mode of the masonry unit (see Section A106.3.3.2).

Reason: This proposal is effectively editorial. It removes duplication and solves the problem caused by reference to an unavailable standard. UBC Standard 21-6 is no longer maintained and is not readily available. In any case, the information contained in UBC Standard 21-6 (a two-paragraph long standard) already appears verbatim in Section A106.3.3.1 item 1. The only differences are:

- Current A106.3.3.1 item 1 uses “should” in several places. The proposal changes these to “shall.”
- UBC Standard 21-6 describes briefly how to calculate the mortar strength from the test. The last sentence of current Section A106.3.3.1 item 1 already replaces that instruction with a more specific reference to Equation A1-3.

Cost Impact: This code change proposal will not increase the cost of construction.

EB19-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A106.3.3.1-EB-BONOWITZ

EB20–12
[B]A103, [B]A106.3.3.9

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] A106.3.3.9 Pointing. Deteriorated mortar joints in unreinforced masonry walls shall be pointed ~~according to UBC Standard 21-8.~~ in accordance with the following requirements:

1. **Joint preparation.** The deteriorated mortar shall be cut out by means of a toothing chisel or nonimpact power tool to a depth at which sound mortar is reached but not less than 3/4-inch (19 mm). Care shall be taken not to damage the brick edges. After cutting is complete, all loose material shall be removed with a brush, air stream, or water stream.
2. **Mortar preparation.** The mortar mix shall be proportioned as required by the registered design professional. The pointing mortar shall be prehydrated by first thoroughly mixing all ingredients dry and then mixing again, adding only enough water to produce a damp workable mix which will retain its form when pressed into a ball. The mortar shall be kept in a damp condition for one and one-half hours; then sufficient water shall be added to bring it to a consistency that is somewhat drier than conventional masonry mortar.
3. **Packing.** The joint into which the mortar is to be packed shall be damp but without freestanding water. The mortar shall be tightly packed into the joint in layers not exceeding 1/4-inch (6.4 mm) in depth until it is filled; then it shall be tooled to a smooth surface to match the original profile.

Nothing shall prevent pointing of any deteriorated masonry wall joints before ~~the tests are made~~ testing in accordance with Section A106.3.3 is performed, except as required in Section A107.1.

Revise as follows:

SECTION A103
DEFINITIONS

POINTING. ~~The partial reconstruction of the bed joints of an unreinforced masonry wall as defined in UBC Standard 21-8.~~ The process of removal of deteriorated mortar from between masonry units and placement of new mortar. Also known as repointing or tuckpointing for purposes of this chapter.

REPOINTING. See Pointing.

TUCKPOINTING. See Pointing.

Reason: This proposal solves a problem caused by reference in the current provisions to an unavailable standard. Current Section A106.3.3.9 references UBC Standard 21-8, but UBC Standards are no longer maintained and are not readily available. However, while various references exist, we know of no ICC-compliant standard for pointing. Therefore, this proposal inserts the relevant and necessary wording from UBC 21-8 (a short document less than a half-page long) into the provisions.

Specifically, the proposal:

- Clarifies that “pointing,” the term used in this chapter, also means “repointing” or “Tuckpointing,” terms used in some locales to mean the same thing. (For examples, see ASTM E2260-03, “Standard Guide for Repointing (Tuckpointing) Historic Masonry;” National Park Service Preservation Brief 2, “Repointing Mortar Joints in Historic Masonry Buildings;” and Brick

Industry Association Technical Note 46, “Maintenance of Brick Masonry.”). Note that despite the current text of section A103, UBC Standard 21-8 did not actually define pointing, so this definition is new, but consistent with that old standard.

- Adds the terms Repointing and Tuckpointing to the Definitions as a guide for those using other terms.
- Adds provisions describing the pointing process, using language taken directly from 1997 UBC Standard 21-8, with a few minor editorial changes. The only substantive change is the removal of a requirement in UBC Standard 21-8 for Type N or Type S pointing mortar. Selection of the mortar can be left to the registered design professional.
- Makes a more specific reference to the tests of interest with respect to pointing.

Cost Impact: This code change proposal will not increase the cost of construction.

EB20-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A106.3.3.9-EB-BONOWITZ

EB21–12
[B]A108.2

Proponent: Gary R. Searer, Wiss, Janney, Elstner Associates, Inc., representing self

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] A108.2 Masonry shear strength. The unreinforced masonry shear strength, v_m, shall be determined for each masonry class from one of the following equations:

1. The unreinforced masonry shear strength, v_m, shall be determined by Equation A1-4 when the mortar shear strength has been determined by Section A106.3.3.1.

$$v_m = 0.56v_t + \frac{0.75P_D}{A} \qquad \textbf{(Equation A1-4)}$$

The mortar shear strength values, v_t, shall be determined in accordance with Section A106.3.3.~~5 and shall not exceed 100 pounds per square inch (689.5 kPa) for the determination of v_m~~.

(Portions of text not shown remain unchanged)

Reason: There is no technical justification for limiting mortar shear strength values to an arbitrary value of 100 psi. While many structures have mortar strengths less than 100 psi, many other structures have mortar strengths greater than 100 psi. There is no need for extra conservatism for stronger, better built, or more robust structures.

Cost Impact: The code change proposal will not increase the cost of construction.

EB21-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A108.2-EB-SEARER.doc

EB22–12
[B]A206.6

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Delete without substitution:

~~**[B]A206.6 Minimum member size.** Wood members used to develop anchorage forces to the diaphragm must be at least 3-inch (76 mm) nominal members for new construction and replacement. All such members must be checked for gravity and earthquake loading as part of the wall-anchorage system.~~

> ~~**Exception:** Existing 2-inch (51 mm) nominal members may be doubled and internailed to meet the strength requirement.~~

Reason: Minimum member size is no longer a requirement of the code for new construction. It is more rational to determine member size by calculation than by arbitrary limits, so smaller members should be acceptable if justified by calculation.

Cost Impact: This code change proposal will not increase the cost of construction.

EB22-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A206.6-EB-BONOWITZ

EB23–12
[B] A301.3

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] A301.3 Alternative design procedures. The details and prescriptive provisions herein are not intended to be the only acceptable strengthening methods permitted. Alternative details and methods may be used where designed by a registered design professional ~~and~~ or approved by the *code official*. Approval of alternatives shall be based on a demonstration that the method or material used is at least equivalent in terms of strength, deflection and capacity to that provided by the prescriptive methods and materials.

Where analysis by a registered design professional is required, such analysis shall be in accordance with all requirements of the building code, except that the seismic forces may be taken as 75 percent of those specified in the building code.

Reason: This proposal provides flexibility to local jurisdictions to use alternative prescriptive solutions without the need for engineered solutions. This is consistent with the intent of the chapter and represents a practice already successfully in place in Berkeley and other California jurisdictions. Since the final sentence of the section already requires a demonstration of equivalence, code official approval is sufficient and there should be no need for both special approval *and* engineered design.

Cost Impact: The code change proposal will not increase the cost of construction.

EB23-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A301.3-EB-BONOWITZ.doc

EB24–12
[B] A302

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

SECTION A302
DEFINITIONS

For the purpose of this chapter, in addition to the applicable definitions in the building code, certain additional terms are defined as follows:

[B] ADHESIVE ANCHOR. An assembly consisting of a threaded rod, washer, nut, and chemical adhesive approved by the *code official* for installation in existing concrete or masonry.
~~**[B] COMPOSITE PANEL.** A wood structural panel product composed of a combination of wood veneer and wood-based material, and bonded with waterproof adhesive.~~
[B] CRIPPLE WALL. A wood-frame stud wall extending from the top of the foundation to the underside of the lowest floor framing.
[B] EXPANSION ANCHOR. An approved post-installed anchor, inserted into a pre-drilled hole in existing concrete or masonry, that transfers loads to or from the concrete or masonry by direct bearing or friction or both.
~~**[B] ORIENTED STRAND BOARD (OSB).** A mat-formed wood structural panel product composed of thin rectangular wood strands or wafers arranged in oriented layers and bonded with waterproof adhesive.~~
[B] PERIMETER FOUNDATION. A foundation system that is located under the exterior walls of a building.
~~**[B] PLYWOOD.** A wood structural panel product composed of sheets of wood veneer bonded together with the grain of adjacent layers oriented at right angles to one another.~~
[B] SNUG-TIGHT. As tight as an individual can torque a nut on a bolt by hand, using a wrench with a 10-inch-long (254 mm) handle, and the point at which the full surface of the plate washer is contacting the wood member and slightly indenting the wood surface.
~~**[B] WAFERBOARD.** A mat-formed wood structural panel product composed of thin rectangular wood wafers arranged in random layers and bonded with waterproof adhesive.~~
~~**[B] WOOD STRUCTURAL PANEL.** A structural panel product composed primarily of wood and meeting the requirements of United States Voluntary Product Standard PS 1 and United States Voluntary Product Standard PS 2. Wood structural panels include all-veneer plywood, composite panels containing a combination of veneer and wood-based material, and mat-formed panels such as oriented strand board and waferboard.~~

WOOD STRUCTURAL PANEL. A panel manufactured from veneers, wood strands or wafers or a combination of veneer and wood strands or wafers bonded together with waterproof synthetic resins or other suitable bonding systems. Examples of wood structural panels are:
Composite panels. A wood structural panel that is comprised of wood veneer and reconstituted wood-based material and bonded together with waterproof adhesive;
Oriented strand board (OSB). A mat-formed wood structural panel comprised of thin rectangular wood strands arranged in cross-aligned layers with surface layers normally arranged in the long panel direction and bonded with waterproof adhesive; or
Plywood. A wood structural panel comprised of plies of wood veneer arranged in cross-aligned layers. The plies are bonded with waterproof adhesive that cures on application of heat and pressure.

Reason: This proposal updates Chapter A3 and provides consistency of definitions between the IEBC and the IBC. The proposal replaces definitions in current IEBC Chapter A3 with the definition of Wood Structural Panel (and the three example types) verbatim from 2012 IBC Chapter 2.

In addition, the definition of Waferboard is proposed to be deleted, as waferboard is no longer used for this application or widely produced.

Cost Impact: The code change proposal will not increase the cost of construction.

EB24-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A302-EB-BONOWITZ.doc

EB25–12
[B] A303.1

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] A303.1 General. For the purposes of this chapter, any of the following conditions shall be deemed a structural weakness: ~~structural weaknesses shall be as specified below.~~

1. Sill plates or floor framing that are supported directly on the ground without a foundation system that conforms to the building code.

(Portions of text not shown remains unchanged)

Reason: This proposal is an editorial improvement and clarification.

Cost Impact: The code change will not increase the cost of construction.

EB25-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A303.1-EB-BONOWITZ

EB26–12
[B] A304.2.6, Chapter A6 (NEW)

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] A304.2.6 New sill plates. Where new sill plates are used in conjunction with new foundations, they shall be minimum 2x nominal thickness and shall be preservative-treated wood or naturally durable wood permitted by the building code for similar applications, and shall be marked or branded by an approved agency. ~~Nails~~ Fasteners in contact with preservative-treated wood shall be hot-dip galvanized or other material permitted by the building code for similar applications. Fasteners, whether cast-in-place or post-installed, that anchor a preservative-treated sill plate to the foundation shall be permitted to be of mechanically deposited zinc-coated steel with coating weights in accordance with ASTM B 695, Class 55 minimum. Metal framing anchors in contact with preservative treated wood shall be galvanized in accordance with ASTM A 653 with a G 185 coating.

Add new standard to Chapter A6 as follows:

ASTM

B695-04 Standard Specification for Coating of Zinc Mechanically Deposited on Iron and Steel

Reason: This proposal makes two improvements related to metal hardware in contact with treated wood:

- In the second sentence, it replaces “nails” with “fasteners” to clarify that the provision is general.
- It inserts a sentence addressing allowable compliance for anchor bolts. The compliance details match those in 2012 IBC Section 2304.9.5.3.

Since ASTM B 695 is not yet used in the IEBC, the proposal adds it to Chapter A6. However, B 695 is already used in the IBC, so a copy is not provided with the proposal.

Cost Impact: The code change proposal will not increase the cost of construction.

EB26-12

Public Hearing:	Committee:	AS	AM	D	
	Assembly:	ASF	AMF	DF	

A304.2.6-EB-BONOWITZ.doc

EB27–12
[B] A304.3.1, [B] A304.3.2, [B] Table A3-A, [B] Table A3-B, [B]Figure A3-3

Proponent: David Bonowitz, Chair, Existing Buildings Subcommittee, Code Advisory Committee, National Council of Structural Engineers Associations (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] A304.3.1 Existing perimeter foundations. Where the building has an existing continuous perimeter foundation, all perimeter wall sill plates shall be anchored to the foundation with adhesive anchors or expansion anchors in accordance with Table A3-A. Anchors shall be installed in accordance with Figure A3-3, with the plate washer installed between the nut and the sill plate. The nut shall be tightened to a snug-tight condition after curing is complete for adhesive anchors and after expansion wedge engagement for expansion anchors.

All anchors shall be installed in accordance with manufacturer's recommendations. Where existing conditions prevent anchor installations through the sill plate, this connection ~~may~~ shall be made in accordance with Figure A3-4A, A3-4B, or A3-4C. The spacing of these alternate connections shall comply with the maximum spacing requirements of Table A3-A. Expansion anchors shall not be used where the installation causes surface cracking of the foundation wall at the locations of the ~~bolt~~ anchor.

[B] A304.3.2 Placement of anchors. Anchors shall be placed within 12 inches (305 mm), but not less than 9 inches (229 mm), from the ends of sill plates and shall be placed in the center of the stud space closest to the required spacing. New sill plates may be installed in pieces where necessary because of existing conditions. For lengths of sill plates ~~greater than 12 feet (3658 mm)~~ 12 feet (3658 mm) or greater, anchors ~~or bolts~~ shall be spaced along the sill plate as specified in Table A3-A. For other lengths of sill plate, anchor placement shall be in accordance with Table A3-B.

> **Exception:** Where physical obstructions such as fireplaces, plumbing or heating ducts interfere with the placement of an anchor, the anchor shall be placed as close to the obstruction as possible, but not less than 9 inches (229 mm) from the end of the plate. Center-to-center spacing of the anchors shall be reduced as necessary to provide the minimum total number of anchors required based on the full length of the wall. Center-to-center spacing shall not be less than 12 inches (305 mm).

[B] TABLE A3-A
SILL PLATE ANCHORAGE AND CRIPPLE WALL BRACING

a. Sill plate anchors shall be ~~chemical~~ adhesive anchors or expansion ~~bolts~~ anchors in accordance with Section A304.3.1.

(Portions of Table not shown remain unchanged)

[B] TABLE A3-B
SILL PLATE ANCHORAGE FOR VARIOUS LENGTHS OF SILL PLATE[a,b]

a. Connections shall be either ~~chemical~~ adhesive anchors or expansion ~~bolts~~ anchors

(Portions of Table not shown remain unchanged)

[B] FIGURE A3-3
SILL PLATE ~~BOLTING~~ ANCHORING TO EXISTING FOUNDATION

(No change to figure)

Reason: The proposal makes terminology changes for consistency. The proposed wording change to Section A304.3.2 provides consistency with current Table A3-B.

Cost Impact: The code change proposal will not increase the cost of construction.

EB27-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A304.3.1-EB-BONOWITZ.doc

EB28–12
[B] A304.4.1.1

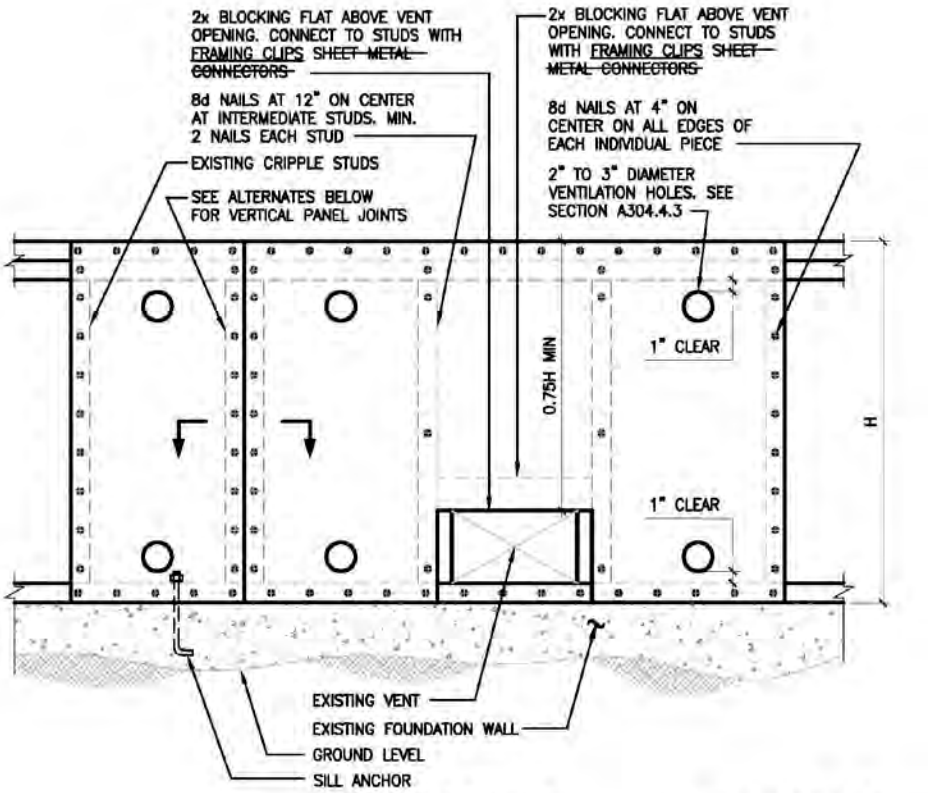
Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] A304.4.1.1 Sheathing installation requirements. Wood structural panel sheathing shall not be less than $^{15}/_{32}$-inch (12 mm) thick and shall be installed in accordance with Figure A3-5 or A3-6. All individual pieces of wood structural panels shall be nailed with 8d common nails spaced 4 inches (102 mm) on center at all edges and 12 inches (305 mm) on center at each intermediate support with not less than two nails for each stud. Nails shall be driven so that their heads are flush with the surface of the sheathing and shall penetrate the supporting member a minimum of $1^{1}/_{2}$ inches (38 mm). When a nail fractures the surface, it shall be left in place and not counted as part of the required nailing. A new 8d nail shall be located within 2 inches (51 mm) of the discounted nail and be hand-driven flush with the sheathing surface. Where the installation involves horizontal joints, those joints shall occur over nominal 2-inch by 4-inch (51 mm by 102 mm) blocking installed with the nominal 4-inch (102 mm) dimension against the face of the plywood.

Vertical joints at adjoining pieces of wood structural panels shall be centered on studs such that there is a minimum 1/8 inch (3.2 mm) between the panels. ~~, and such that the nails are placed a minimum of ½ inch (12.7 mm) from the edges of the existing stud.~~ Where ~~such~~ required edge distances cannot be maintained because of the width of the existing stud, a new stud shall be added adjacent to the existing studs and connected in accordance with Figure A3-7.



FOR SI: 1 INCH = 25.4mm

FIGURE A3–7 – PARTIAL CRIPPLE STUD WALL ELEVATION

Reason: This proposal revises the edge distance requirement to avoid a potential problem nailing into narrow existing studs. The current requirement, shown in Figure A3-7, puts the nail 1/2 inch from the plywood edge; with a 2x stud, this leaves too little edge distance into the stud. A 3/8 inch edge distance in the plywood is considered adequate for this application.

In addition to changing the edge distance in Figure A3-7, the proposal makes the following improvements:

- Removes the duplicative edge distance requirement from Section A304.4.1.1, deferring to Figure A3-7.
- Revises wording in Figure A3-7, from “sheet metal connectors” to “framing clips” for consistency.
- Defines the height of the cripple wall, H, in Figure A3-7.

Cost Impact: The code change proposal will not increase the cost of construction.

EB28-12

Public Hearing: Committee: AS AM D

EB29–12
[B]A403.5

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B]A403.5. Deformation Compatibility and PΔ effects. The requirements of the building code shall apply, except as modified herein. All structural framing elements and their connections not required by design to be part of the lateral force-resisting system shall be designed and/or detailed to be adequate to maintain support of ~~design dead plus live~~ expected gravity loads when subjected to the expected deformations caused by seismic forces. ~~The stress analysis of cantilever columns shall use a buckling factor of 2.1 for the direction normal to the axis of the beam.~~ Increased demand due to PΔ effects and story sidesway stability shall be considered in retrofit stories that rely on the strength and stiffness of cantilever columns for lateral resistance.

Reason:
The proposal makes a number of revisions related to the performance of gravity load-carrying columns subjected to lateral deformations within the retrofitted story:

- The title of the section is changed to reflect its actual concerns, which are greater than just P-delta effects.
- "Design dead plus live" loads represent an over-conservative requirement for existing elements that are not part of the lateral system, so only "expected gravity" are required.
- The current sentence about "stress analysis of cantilever columns" is unclear as to whether it is concerned with columns that are part of the lateral system (which would likely be columns added as part of the retrofit) or existing columns carrying only gravity loads. The proposed revision handles both situations:
    - For existing gravity columns, the current sentence is unnecessary. The first two sentences establish the general requirements. A specific effective length factor need not be given here, especially since it might be over-conservative for the actual condition.
    - For columns that do resist lateral loads, the proposed new sentence clarifies that increased demands must be considered. Specific criteria are, appropriately, left to the engineer of record, subject to the general requirements in the first part of the section.

Cost Impact: This code change proposal will not increase the cost of construction.

EB29-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A403.5-EB-BONOWITZ

EB30–12
[B]A403.8

Proponent: Gary Searer, Wis, Janney, Elstner Associates, Inc, representing self

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B]A403.8: Horizontal diaphragms. The strength of an existing horizontal diaphragm sheathed with wood structural panels or diagonal sheathing need not be investigated ~~unless the diaphragm is required to transfer lateral forces from vertical elements of the seismic-force-resisting system above the diaphragm to elements below the diaphragm because of an offset in placement of the elements~~.

~~Wood diaphragms with stories above shall not be allowed to transmit lateral forces by rotation or cantilever except as allowed by the building code; however,~~ ~~r~~ Rotational effects shall be accounted for when asymmetric ~~unsymmetric~~ wall stiffness increases shear demands.

> ~~**Exception:** Diaphragms that cantilever 25 percent or less of the distance between lines of lateral-load-resisting elements from which the diaphragm cantilevers may transmit their shears by cantilever, provided that rotational effects on shear walls parallel and perpendicular to the load are taken into account.~~

Reason: None of these requirements is particularly clear, and none of these requirements is required or assists the engineer in understanding how the SWOF structure will behave. Specifically, by definition, all SWOF structures already use the diaphragm to transfer lateral forces (including by rotation or cantilever), but the intent of the deleted portions was not to trigger investigation of the floor diaphragm; indeed, no soft/weak/open front wood-framed structures have ever been identified where a structural wood panel diaphragm or diagonally sheathed diaphragm failed, resulting in a collapse in a prior earthquake (where the current, unclear requirement would have "caught" and prevented the failure.

"Unsymmetric" is not a word.

The exception is so unclear as to be useless (Is it an exception to the first paragraph of this section, the second paragraph, or both?), and even has the potential to make proper strengthening more difficult or less economical than required. For example, consider a 90-foot long by 25-foot wide structure, with a solid back wall and two end transverse walls. Assuming that this poorly worded exception is intended to take the distance between transverse walls times 25 percent (25 percent of 90 feet is 22.5 feet), this structure would not be allowed without adding strength and stiffness along the open front, although there is nothing wrong with having a robust lateral force resisting system that consists of the back wall and the two end transverse walls. If one then adds interior transverse walls at the third points, then the maximum cantilever counterintuitively drops to 25 percent of 30 feet or 7.5 feet, and you would still have to add strength and stiffness along the open front. Conversely, if the structure were 110 feet long by 25 feet wide, the structure would qualify for this exception unless the designer tried to add interior transverse walls at the third points -- at which point, the exception "blows up" and the structure would require greater intervention -- again a counterintuitive result. Finally, rotational effects are already taken into account in the second paragraph, so how this is an exception is unclear.

Cost Impact: This code change proposal will not increase the cost of construction.

EB30-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A403.8-EB-SEARER

EB31–12
[B]A404.2.4

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B]A404.2.4 Shear wall hold-downs. Shear walls shall be provided with hold-down anchors at each end. Two hold-down anchors are required at intersecting corners. Hold-downs shall be approved connectors with a minimum ⅝-inch-diameter (15.9 mm) threaded rod or other approved anchor with a minimum allowable load of 4,000 pounds (17.8 kN). Anchor embedment in concrete shall not be less than 5 inches (127 mm). Tie-rod systems shall not be less than ⅝ inch (15.9 mm) in diameter unless using high strength cable. ~~Threaded rod or high~~ High strength cable elongation shall not exceed 5/8 inch (15.9 mm) ~~using design forces~~ under a 4,000 pound (17.8 kN) axial load.

Reason: This proposal clarifies the current requirement, acknowledging that Section A404 is a prescriptive approach, so there are no “design forces” to be applied. Instead, the required allowable strength from earlier in the section is used to gauge the cable axial stiffness. This is consistent with the 2009 IEBC commentary. Threaded rods are excluded from the elongation requirement because they have a minimum diameter given in the previous sentence (and because a 5/8” steel rod would easily meet the deflection limit).

Cost Impact: This code change proposal will not increase the cost of construction.

EB31-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A405.2.4-EB-BONOWITZ

EB32–12
[B]A404.2.4

Proponent: Marko Schotanus, Chair, Existing Buildings Committee, Structural Engineers Association of California (MSchotanus@ruthchek.com)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B]A404.2.4 Shear wall hold-downs. Shear walls shall be provided with hold-down anchors at each end. Two hold-down anchors are required at intersecting corners. Hold-downs shall be approved connectors with a minimum ⅝-inch-diameter (15.9 mm) threaded rod or other approved anchor with a minimum allowable load of 4,000 pounds (17.8 kN). Anchor embedment in concrete shall not be less than 5 inches (127 mm). Tie-rod systems shall not be less than ⅝ inch (15.9 mm) in diameter unless using high strength cable. ~~Threaded rod or high strength cable elongation shall not exceed 5/8 inch (15.9 mm) using design forces.~~

Reason: This proposal removes the unnecessary final sentence regarding hold-down stiffness. First, the current provision is impossible to implement because Section A405 is a prescriptive approach with no “design forces” and because the provision does not specify a length over which to measure or calculate the elongation. Second, if the 4000 pound allowable load from earlier in the provision is used to gauge the stiffness, the minimum diameter 5/8 inch rod would have to be over 100 ft long to see a 5/8 inch elongation. Typical cable systems, while less stiff than rods, are adequate as well. Finally, the 5/8 inch elongation limit means little in terms of performance, because different shear wall lengths and story heights will experience different drifts for the same hold down elongation.

Cost Impact: This code change proposal will not increase the cost of construction.

EB32-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A405.2.4-EB-SCHOTANUS

EB33–12
[B]A503.2

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[A]A503.2 Properties of cast-in-place materials. Except where specifically permitted herein, the stress-strain relationship of concrete and reinforcement shall be determined from published data or by testing. All available information, including building plans, original calculations and design criteria, site observations, testing and records of typical materials and construction practices prevalent at the time of construction, shall be considered when determining material properties. For Tier 3 analysis, nominal and expected material properties shall be established in accordance with Section 6.2 of ASCE 41. ~~be used in lieu of nominal properties in the calculation of strength, stiffness and deformability of building omponents~~. ~~The procedure for testing and determination of material properties shall be from Section 6.2 of ASCE 41-06.~~

Reason: This proposal intends to update a reference standard and makes appropriate corresponding revisions. ASCE 41-06 Supplement No. 1 has been available to and in use by engineers for several years. It is available online, free, at http://content.seinstitute.org/publications/ASCE41supplement.html. A pdf version is being submitted with this proposal.

Supplement No. 1 modified the ASCE 41 modeling parameters and acceptance criteria for concrete elements of interest in IEBC Chapter A5. The modifications reflect recent testing and represent more rational and appropriately less conservative criteria than were in ASCE 41 previously. They should be used. The current criteria of Chapter A5 use expected material properties as a way of compensating for the previous conservatism of ASCE 41. Now that Supplement No. 1 is available, that compensation is no longer needed, and ASCE 41, with Supplement No. 1, may be referenced directly, as proposed.

Cost Impact: This code change proposal does not increase the cost of construction.

Analysis: This change proposal references ASCE standard 41, which is already referenced in this code. However, the proposed change to code text is written to correlate with supplement 1 of the 2006 edition of the standard rather than the simply the 2006 edition presently referenced in the code. The update to this standard will be considered by the Administrative Code Committee during the 2013 Code Development Cycle. Should this code change proposal be approved, but the update to the standard not be approved by the Administrative Code Committee, the code text will revert to the text as it appears in the 2012 edition of the code.

EB33-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A503.2-EB-BONOWITZ

EB34–12
[B] A503.2, [B] A504.1, [B] A505.1, [B]A506.3.2, [B] A507.1, [B]Chapter A6

Proponent: Jennifer Goupil, The Structural Engineering Institute of ASCE (jgoupil@asce.org)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] A503.2 Properties of cast-in-place materials.
Except where specifically permitted herein, the stress-strain relationship of concrete and reinforcement shall be determined from published data or by testing. All available information, including building plans, original calculations and design criteria, site observations, testing and records of typical materials and construction practices prevalent at the time of construction, shall be considered when determining material properties.

For Tier 3 analysis, expected material properties shall be used in lieu of nominal properties in the calculation of strength, stiffness and deformabiltity of building components.

The procedure for testing and determination of material properties shall be from ASCE 41 Section 10.2. ~~6.2 of ASCE 41-06.~~

[B] A504.1 Site ground motion for Tier 1 analysis.
The earthquake loading used for the determination of demand on elements of the structure shall correspond to that required by ASCE 41 Chapter 4.~~ASCE 31 Tier 1~~.

[B] A505.1 General.
Structures conforming to the requirements of the ASCE 41 Chapter 4~~3~~1 Tier 1, Screening Phase, are permitted to be shown to be in conformance to this chapter by submission of a report to the building official as described in this section.

[B] A506.3.2 Component stiffness.
Component stiffness shall be calculated based on the approximate values shown in ASCE 41 Table 10-5 ~~6-5 of ASCE 41~~.

[B] A507.1 General.
A Tier 3 evaluation shall be performed using the nonlinear procedures of ASCE 41 Section 10.3.1.2.2 ~~6.3.1.2.2. of ASCE 41~~. The general assumptions and requirements of ASCE 41 Section 10.3 ~~Section 6.0~~, excluding concrete frames with in-fills shall be used in the evaluation. Site-ground motions in accordance with Section A504.3 are permitted for this evaluation.

Reason: The purpose of this proposal is update Appendix A5 to the recently updated ASCE 41-13, which is a combination of the two standards referenced in the 2012 IEBC (ASCE 31-03 and 41-06). The updated and combined standard follows the same three-tiered approach ASCE 31/41 so this proposal is simply an update of section references. The concrete provisions of ASCE 41-13 Chapter 4 (Tier 1 in A5) and Chapter 10 (Tier 3 in A5) have been updated based on recent research and also incorporate provisions adopted by the ACI 369 Committee as representative of the state of the practice for the seismic evaluation and retrofit of existing concrete buildings.

A public ballot version of the new standard will be available from ASCE in the spring of 2012 and it is expected that it a prepublication (white cover) version will be available prior to the ICC Final Action Hearings in October of 2012. Any person interested in obtaining a public comment copy of ASCE 41-13 may do so by contacting the proponent at jgoupil@asce.org.

Cost Impact: The code change proposal will not increase the cost of construction.

Analysis: This change proposal references ASCE standard 41, which is already referenced in this code. However, the proposed change to code text is written to correlate with a new edition of this standard ASCE 41-13, rather than the edition presently referenced in the code, which is the 2006 edition. The 2013 edition of this standard is not yet completed, published and available.

The update to this standard will be considered by the Administrative Code Committee during the 2013 Code Development Cycle. Should this code change proposal be approved, but the update to the standard not be approved by the Administrative Code Committee, the code text will revert to the text as it appears in the 2012 edition of the code. Additionally, if the standard update is approved but the document is not published and available by December 1, 2014, an errata will be issued to the code that will return the affected code text to the text as it appears in the 2012 edition of the code.

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EB34-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A503.2-EB-GOUPIL

EB35–12
[B]A507.1

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B]A507.1 General. A Tier 3 evaluation shall be performed using the ~~nonlinear procedures~~ Nonlinear Static Procedure or Nonlinear Dynamic Procedure of Section ~~6.3.1.2.2~~ 3 of ASCE 41. The general assumptions and requirements of Sections 2.0, 3.0 and 6.0, excluding those for concrete frames with ~~in-fills~~ infills, shall be used in the evaluation. Reduced IBC level ~~Site~~ site-ground motions in accordance with Section A504.3 are permitted for this evaluation. Structures meeting the ASCE 41 Life Safety (LS) acceptance criteria shall be deemed to comply with this chapter. If a Tier 3 analysis identifies nonconforming conditions, such conditions shall be modified to conform to the acceptance criteria.

Reason: This proposal corrects and revises Chapter A5's references to ASCE 41. The proposed references to ASCE 41 Sections 2.0, 3.0, and 6.0, as opposed to just Section 6.0, give a more complete understanding of the various ASCE 41 provisions that Chapter A5 expects to be followed.

The proposed added sentence at the end of the section clarifies the Performance Level to be used with ASCE 41 in order to match the general intent of Chapter A5. This was always the intent of this section; it had just not been stated clearly before.

Cost Impact: This code changed proposal will not increase the cost of construction.

EB35-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

A507.1-EB-BONOWITZ

EB36–12
[B]C101.1, [B]C101.2, [B]C101.3 (New)

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

~~**[B]C101.1 Intent and purpose.** The provisions of this chapter provide prescriptive methods for selected structural retrofitting of existing buildings to increase their resistance to wind loads. Except as provided herein, other structural provisions of the *International Building Code* or the *International Residential Code* shall apply, as required.~~

~~**[B]C101.2 Scope.** The following prescriptive methods are intended for applications where the gable end wall framing is provided by a metal-plate-connected gable end frame or a conventionally framed gable end. The retrofits are appropriate for wall studs or webs spaced 24 inches (610 mm) on center maximum and oriented with the wide face either parallel or perpendicular to the surface of the gable end. Gable ends to be strengthened shall be permitted to be retrofitted using methods prescribed by this chapter.~~

[B]C101.1 Purpose. This chapter provides prescriptive methods for partial structural retrofit of an existing building to increase its resistance to out-of-plane wind loads. It is intended for voluntary use and for reference by mitigation programs. The provisions of this chapter do not necessarily satisfy requirements for new construction. Unless specifically cited, the provisions of this chapter do not necessarily satisfy requirements for structural improvements triggered by addition, alteration, repair, change of occupancy, building relocation or other circumstances.

[B]C101.2 Eligible buildings and gable end walls. The provisions of this chapter are applicable only to buildings that meet the following eligibility requirements:

1. The building is not more than three stories tall, from adjacent grade to the bottom plate of each gable end wall being retrofitted with this chapter.
2. The building is classified as Occupancy Group R3 (1-2 family dwellings)
3. The structure includes one or more wood-framed gable end walls, either conventionally framed or metal-plate-connected.

In addition, the provisions of this chapter are applicable only to gable end walls that meet the following eligibility requirements:

4. Each gable end wall has or shall be provided with studs or vertical webs spaced 24 inches (610 mm) on center maximum.
5. Each gable end wall has a maximum height of 16 ft.

[B]C101.3 Compliance. Eligible gable end walls in eligible buildings may be retrofitted with this chapter. Eligible buildings with one or more ineligible gable end walls may be retrofitted with this chapter, provided all ineligible gable end walls are retrofitted with alternative criteria approved by the building official as equivalent. All other modifications required for conformance with this chapter shall be designed and constructed in accordance with the *International Building Code* or *International Residential Code* provisions for new construction except as specifically provided for by this chapter.

Reason: This proposal reorganizes, clarifies, and supplements the Chapter's provisions regarding intent, scope, eligibility, and compliance.

Proposed section C101.1 restates the first sentence of current section C101.1 and adds two clarifying sentences that confirm the relationship of this chapter to the rest of the IEBC and to other I-codes (similar to the current text of Section C201.1). Chapter C1 was added to the 2012 IEBC as a good idea suitable for voluntary use but not benchmarked in terms of performance. Because other IEBC provisions at times call for structural evaluation or retrofit to resist wind loads, it is important to be clear that Chapter C1 does not necessarily satisfy those requirements.

Proposed section C101.2 lays out the eligibility requirements in a more direct and specific way:

- Item 1: The proposed three-story limit is new, but it reflects our understanding (based on review of the supporting calculations and Chapter history) of the intent of Chapter C1 to apply to typical 1-2 unit dwellings of conventional wood framing. Given the limits of the Chapter's supporting studies and past applications, it would be wrong to encourage this retrofit scheme for taller or more complex structures that happen to have wood framed gable end walls.
- Item 2: The proposed occupancy eligibility rule is new, but it again reflects our understanding of the intent of Chapter 1 to apply to typical 1-2 unit dwellings. Given the limits of the Chapter's supporting studies, past applications, and lack of benchmarking by risk category, it would be wrong to encourage this retrofit scheme for multi-unit complexes or for assisted living, commercial, educational, or other occupancies simply because the building looks like a house. (For ease of use by homeowners and residential contractors, we have proposed this eligibility limit in terns of occupancy. Alternatively, because the governing load is extreme wind, eligibility could be written in terms of risk category with reference to IBC Table 1604.5.)
- Item 3: This is a simple provision that merely confirms the presence of the structural elements of interest.
- Item 4: The 24 inch spacing requirement matches the current provision in C101.2. The proposed rule adds an allowance that a non-conforming structure may be made to conform through the retrofit.
- Item 5: The 16 ft height limit comes from current Table C104.2. It is useful to have such eligibility rules in one place near the top of the chapter.

Proposed section C101.3 implements the eligibility rules of proposed section C101.2 and explicitly addresses the case of buildings where some gable end walls are eligible and others are not. The final sentence restates the provision from current section C101.1, but in an appropriate place. The text is borrowed from IEBC A403.1, which has the same intent.

In summary, the proposal is measured and fair, and it respects the intention of the Chapter and its proponents. We have limited the proposal to basic issues, leaving aside remaining questions regarding, for example, maximum spans, suitable roof sheathing, suitable ceiling construction, and suitable exterior wall sheathing or siding.

Cost Impact: This code change proposal will not increase the cost of construction.

EB36-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

C101.1-EB-BONOWITZ

EB37–12
[B]C201.1, [B]C201.2

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

~~**[B]C201.1 Intent and purpose.** The provisions of this chapter provide prescriptive methods for selected structural retrofitting of existing buildings. Compliance with these provisions will not always meet the requirements for new construction in the *International Building Code* or the *International Residential Code*. The provisions of this chapter are intended to provide methods for strengthening existing buildings to increase resistance to wind loads.~~

~~**[B]C201.2 Scope.** The provisions of this chapter are a prescriptive alternative for one- and two-family dwellings located where the wind speed according to Section 1609 of the *International Building Code* exceeds 100 mph (44.7 m/s) to achieve compliance with Section 706.3 of the *International Existing Building Code*.~~

[B]C201.1 Purpose. This chapter provides prescriptive methods for partial structural retrofit of an existing building to increase its resistance to wind loads. It is intended for voluntary use and for reference by mitigation programs. The provisions of this chapter do not necessarily satisfy requirements for new construction. Unless specifically cited, the provisions of this chapter do not necessarily satisfy requirements for structural improvements triggered by addition, alteration, repair, change of occupancy, building relocation or other circumstances.

[B]C201.2 Eligible conditions. The provisions of this chapter are applicable only to buildings that meet the following eligibility requirements:
1. Buildings assigned to risk category I or II per *International Building Code* Table 1604.5.

Reason: This proposal clarifies and corrects the Chapter's provisions regarding intent, scope, and eligibility.

Proposed section C201.1 restates current section C201.1 and adds a clarifying sentence that confirms the relationship of this chapter to the rest of the IEBC and to other I-codes. Chapter C2 was added to the 2012 IEBC as a good idea suitable for voluntary use but not benchmarked in terms of performance. Because other IEBC provisions at times call for structural evaluation or retrofit to resist wind loads, it is important to be clear that Chapter C2 does not necessarily satisfy those requirements. In particular, the statement in current section C201.2 regarding compliance with Section 706.3 is for that reason proposed for deletion.

Proposed section C201.2 expands the current reference to "one- and two-family dwellings." Since nothing in Chapter C2 presumes a building use or a construction type specific to R3 occupancy, the Chapter actually has broader applicability than is currently stated. The appropriate limit is to risk category I and II buildings, as proposed. Also, there is no need to state a minimum wind speed in the provision; if the criteria are good for wind speeds over 100 mph, they are also good for lower demands.

Cost Impact: This code change proposal will not increase the cost of construction.

EB37-12

Public Hearing:				
	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

C201.1-EB-BONOWITZ

EB38–12
[B] C201.2, [B] Table C202.1.2

Proponent: Gary J. Ehrlich, P.E., National Association of Home Builders (NAHB) (gehrlich@nahb.org)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] C201.2 Scope. The provisions of this chapter are a prescriptive alternative for one- and two-family dwellings located where the ultimate design wind speed V_{ult}, determined in accordance with Figure 1609A ~~according to Section 1609~~ of the *International Building Code* exceeds 130 mph (58 m/s) ~~100 mph (44.7 m/s)~~ to achieve compliance with Section 706.3 of the *International Existing Building Code*.

[B] TABLE C202.1.2
SUPPLEMENTAL FASTENERS AT PANEL EDGES AND INTERMEDIATE FRAMING

EXISTING FASTENERS	EXISTING FASTENER SPACING (EDGE OR INTERMEDIATE SUPPORTS)	MAXIMUM SUPPLEMENTAL FASTENER SPACING FOR ~~WIND SPEEDS GREATER THAN 100 MPH~~ 130 MPH < V_{ULT} ≤ 140 MPH	MAXIMUM SUPPLEMENTAL FASTENER SPACING FOR INTERIOR ZONE[c] LOCATIONS FOR ~~WIND SPEEDS EXCEEDING~~ V_{ULT} > 140 MPH ~~110 MPH~~ AND EDGE ZONES NOT COVERED BY THE COLUMN TO THE RIGHT	EDGE ZONE[d] FOR ~~WIND SPEED GREATER THAN~~ V_{ULT} > 160 MPH ~~120 MPH~~ AND EXPOSURE C, OR ~~WIND SPEED GREATER THAN~~ V_{ULT} > 180 MPH ~~140 MPH~~ AND EXPOSURE B

(Portions of table not shown remain unchanged)

Reason: The purpose of this proposal is to correlate basic wind speed triggers in the IEBC with the IBC. The 2012 IBC adopted new ultimate-strength basis wind speed maps from ASCE 7-10. A conversion factor from the ultimate wind speed selected from the new maps (V_{ult}) down to the old allowable-stress level wind speed (V_{asd}) was introduced into the IBC to accommodate triggers for special requirements in high-wind regions, tables limiting the use of ballasted roofs at certain heights and wind speeds, and tables for proper selection of shingles and other roofing materials for wind resistance. Unfortunately, this conversion was not introduced into the IEBC, with the result that provisions which were supposed to apply only in high-wind regions now appear to apply across the entire United States. This proposal not only corrects this oversight, it fully updates the IEBC provisions to match the 2012 IBC and ASCE 7-10.

Cost Impact: The code change proposal will not increase the cost of construction.

EB38-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

C201.2-EB-EHRLICH

EB39–12
[B] Figure A3-1, [B] Figure A3-2

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] FIGURE A3-1
NEW REINFORCED CONCRETE FOUNDATION SYSTEM

a. Where frost conditions occur, the minimum depth shall extend below the frost line.
b. The ground surface along the interior side of the foundation may be excavated to the elevation of the top of the footing.
c. ~~When expansive soil is encountered~~ Where the code official has designated the soil as expansive, the foundation depth and reinforcement shall be ~~as directed~~ approved by the ~~building~~ code official.

(Portions of figure not shown remain unchanged)

[B] FIGURE A3-2
NEW MASONRY CONCRETE FOUNDATION

a. Where frost conditions occur, the minimum depth shall extend below the frost line.
b. The ground surface along the interior side of the foundation may be excavated to the elevation of the top of the footing.
c. ~~When expansive soil is encountered~~ Where the code official has designated the soil as expansive, the foundation depth and reinforcement shall be ~~as directed~~ approved by the ~~building~~ code official.

(Portions of figure not shown remain unchanged)

Reason: This proposal clarifies the intended applicability and alternative criteria for expansive soil conditions. The intent of these notes is simply that the default, tabulated values might not be appropriate for highly expansive soil. Since most building departments are aware of local expansive soil conditions (and might even have their own prescriptive pre-approved details), the intent is to call attention to those known cases. Thus, the current wording about "when expansive soil is encountered" gives the wrong impression. Instead, since this chapter presumes no engineered design, there should be no burden on the builder to know or discover the soil conditions. Rather, the burden should merely be to check if the code official has made a designation, and if so, to get appropriate plan check approval for the footing details.

Cost Impact: This code change proposal will not increase the cost of construction.

EB39-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

F A3-1-EB-BONOWITZ

EB40–12
[B] Figure A3-4A

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise Figure A3-4A as follows:

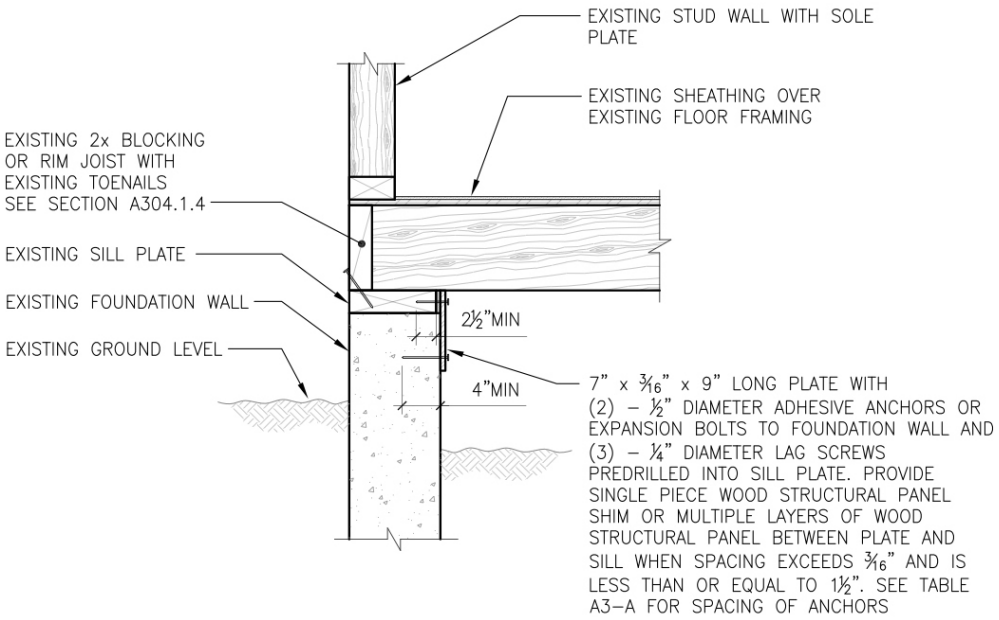
1. Revise note at top left:
Existing 2x BLOCKING OR RIM JOIST WITH EXISTING TOENAILS. SEE SECTION ~~A304.1.4~~ A304.1.3

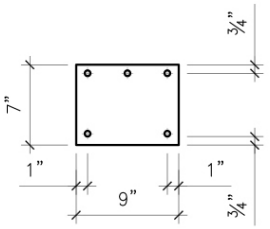
2. Revise long note at right side:
7" x 3/16" x 9" LONG PLATE WITH (2) – ½" DIAMETER ADHESIVE ANCHORS OR EXPANSION ~~BOLTS~~ ANCHORS TO FOUNDATION WALL …

3. Correct note 1 [preferably through errata to the 2012 edition]:
1. If shim space exceeds ~~2 ½ in.~~ 1 ½ in., alternate details will be required.

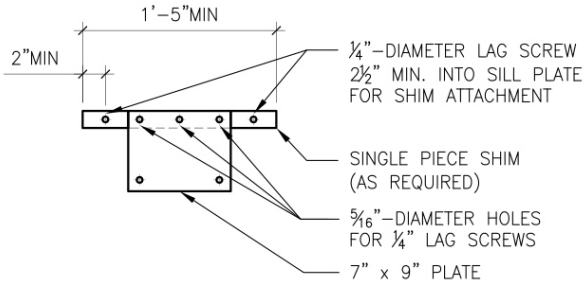
4. Revise note 2:
Where required, single piece shim shall be ~~foundation grade redwood~~ naturally durable wood or preservative-treated wood. If preservative-treated wood is used, it shall be isolated from the foundation system with a moisture barrier.

5. Correct [preferably through errata to the 2012 edition] and revise title:
FIGURE A3-4A: ~~SILL PLATE BOLTING IN EXISTING FOUNDATION—ALTERNATE~~ ALTERNATE SILL PLATE ANCHORING IN EXISTING FOUNDATION WITHOUT CRIPPLE WALLS AND FLOOR FRAMING NOT PARALLEL TO FOUNDATIONS





HOLE DIAMETER SHALL NOT EXCEED CONNECTOR DIAMETER BY MORE THAN 1/16"



CONNECTION WHEN SHIM SPACE EXCEEDS ¾" IN WIDTH UP TO 1½"

Reason: The proposal makes five editorial changes, two of which reflect errors in production of the 2012 edition (first printing, April 2011) that should preferably be corrected through errata. Bases for the five proposed changes are:

1. Correction of cited code section.
2. Editorial revision for consistent terminology (“anchor,” not “bolt”)
3. Errata. The correct value of 1 ½ in. was in approved proposal EB54-09/10 but did not make it into print.
4. Editorial revision for consistency with current Section A304.2.6, which was revised for 2012.
5. Errata, with one editorial change for 2015. The correct title, “Alternate sill plate …”, was in approved proposal EB54-09/10 but did not make it into print. That approved title actually read “Alternate sill plate bolting in existing foundation …”. For terminology consistency, it should now read as proposed here: “Alternate sill plate anchoring in existing foundation …”.

Cost Impact: This code change proposal will not increase the cost of construction.

EB40-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

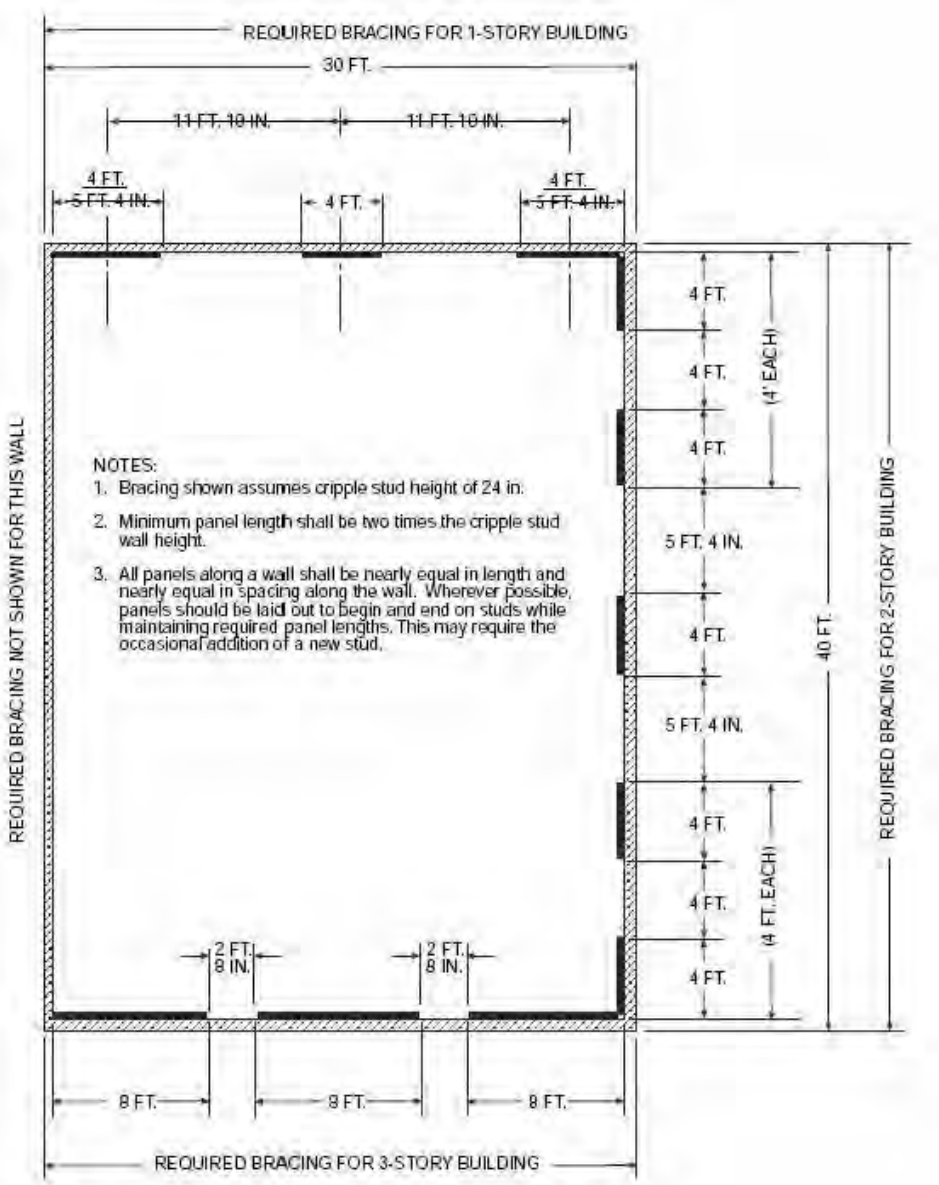
F A3-4A-EB-BONOWITZ

EB41–12
[B] Figure A3-10

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise Figure A3-10 as follows:



Bracing determination:
1-story building—each end and not less than 40% of wall length.[1]
Transverse wall—30 ft. × 0.40 = 12 ft. minimum panel length = 4 ft. 0 in.
2-story building—each end and not less than 50% of wall length.[1]
Longitudinal wall—40 ft. × 0.50 = 20 ft. 0 in. minimum of bracing.
3-story building—each end and not less than 80% of wall length.[1]
Transverse wall —30 ft. × 0.80 = 24 ft. 0 in. minimum of bracing.
[1]See Table A3-A for buildings with both plaster walls and roofing exceeding 6 psf (287 N/m^2).

For SI: 1 inch = 25.4 mm, 1 foot = 304.8 mm.

FIGURE A3-10—FLOOR PLAN—CRIPPLE WALL BRACING LAYOUT

Reason: The proposal corrects the dimensions shown at the top of Figure A3-10 for 1-story buildings. The calculations at the bottom of the figure are correct, so the figure should be revised in three ways:

- Delete the dimension strings showing 11'-10" spacing between panel centers.
- Change the end panel lengths from 5'-4" to 4'-0" in two places.
- Redraw the end panel lengths to approximate scale as 4-ft long sections.

Cost Impact: This code change proposal will not increase the cost of construction.

EB41-12
Public Hearing: Committee: AS AM D

EB42–12
[B] Table A3-A, [B] Figure A3-3

Proponent: David Bonowitz, S.E., representing NCSEA Code Advisory Committee, Existing Buildings Subcommittee (dbonowitz@att.net)

THIS PROPOSAL IS ON THE AGENDA OF THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE. SEE THE TENTATIVE HEARING ORDER FOR THE IBC STRUCTURAL CODE DEVELOPMENT COMMITTEE.

Revise as follows:

[B] TABLE A3-A
SILL PLATE ANCHORAGE AND CRIPPLE WALL BRACING

a. Sill plate anchors shall be chemical anchors or expansion bolts in accordance with Section A304.3.1.
b. All washer plates shall be 3 inches by 3 inches by .229 inch (76 mm x 76 mm x 5.8 mm) ~~2 inches by 2 inches by $^{3}/_{16}$ inch (51 mm by 51 mm by 4.8 mm)~~ minimum.
c. See Figure A3-10 for braced panel layout.
d. Braced panels at ends of walls shall be located as near to the end as possible.
e. All panels along a wall shall be nearly equal in length and shall be nearly equal in spacing along the length of the wall.
f. The minimum required underfloor ventilation openings are permitted in accordance with Section A304.4.4.

(Portions of Table not shown remain unchanged)

[B] FIGURE A3-3
SILL PLATE BOLTING TO EXISTING FOUNDATION

For SI: 1 inch = 25.4 mm.
NOTES:
1. Plate washers shall comply with the following:
   ½ in. anchor or bolt – ~~2 in. x 2 in. x 3/16 in.~~ 3 in x 3 in x 0.229 in (76 mm x 76 mm x 5.8 mm) minimum
   $^{5}/_{8}$ in. anchor or bolt – ~~2 in. x 2 in. x 3/16 in.~~ 3 in x 3 in x 0.229 in (76 mm x 76 mm x 5.8 mm) minimum
2. See Figure A3-5 or A3-6 for cripple wall bracing.

(Portion of Figure not shown remains unchanged)

Reason: This proposal coordinates the minimum washer size with provisions in IRC Section R602.11. The change is made to both Table A3-A (note b) and Figure A3-3 (note 1).

Note to ICC: The washer size listed in 2012 Figure A3-3 note 1 should already be 3" x 3" x 1/4" per EB54-09/10, but that approved change was apparently not picked up in publication. This should be corrected through IEBC errata

Cost Impact: This code change proposal will not increase the cost of construction.

EB42-12

Public Hearing:	Committee:	AS	AM	D
	Assembly:	ASF	AMF	DF

T A3-A-EB-BONOWITZ