

INTERNATIONAL EXISTING BUILDING CODE

EB10-09/10, Part I

IEBC 605.1, 705.2, 706.1, 805.4 (New), 805.4.1 (New), 912.4.1, 912.4.2, 912.8.2, 1004.1(New), 1005.1, 1103.3, 1105.6; IBC 3411.4, 3411.4.1, 3411.4.2, 3411.5, 3411.6, 3411.8(New), 3411.8.1(New), 3411.9; (IEBC [B] 310.4, 310.4.1, 310.4.2, 310.5, 310.6, 310.8(New), 310.8.1 (New), 310.9), 1007.1 (IFC [B] 1007.1)

Proposed Change as Submitted

Proponent: Gene Boecker, Code Consultants, Inc.

PART I – IEBC

CHAPTER 5 REPAIRS

SECTION 504 MEANS OF EGRESS

504.1 General. Repairs shall be done in a manner that maintains the level of protection provided for the means of egress.

SECTION 505 ACCESSIBILITY

505.1 General. Repairs shall be done in a manner that maintains the level of accessibility provided.

CHAPTER 6 ALTERATIONS—LEVEL 1

SECTION 604 MEANS OF EGRESS

604.1 General. Repairs shall be done in a manner that maintains the level of protection provided for the means of egress.

SECTION 605 ACCESSIBILITY

605.1 General. A building, facility or element that is altered shall comply with the applicable provisions in Sections 605.1.1 through 605.1.14, Chapter 11 of the International Building Code and ICC A117.1 unless it is technically infeasible. Where compliance with this section is technically infeasible, the alteration shall provide access to the maximum extent that is technically feasible.

A building, facility or element that is constructed or altered to be accessible shall be maintained accessible during occupancy.

Exceptions:

1. The altered element or space is not required to be on an accessible route unless required by Section 605.2.
2. ~~Accessible means of egress required by Chapter 10 of the International Building Code are not required to be provided in existing buildings and facilities.~~ The altered element or space is not required to provide accessible means of egress, unless required by Section 805.4.

3. Type B dwelling or sleeping units required by Section 1107 of the *International Building Code* are not required to be provided in existing buildings and facilities.
4. The alteration to Type A individually owned dwelling units within a Group R-2 occupancy shall meet the provisions for Type B dwelling units and shall comply with the applicable provisions in Chapter 11 of the *International Building Code* and ICC A117.1.

605.2 Alterations affecting an area containing a primary function. Where an *alteration* affects the accessibility to, or contains an area of *primary function*, the route to the *primary function* area shall be *accessible*. The accessible route to the primary function area shall include toilet facilities or drinking fountains serving the area of primary function.

Exceptions:

1. The costs of providing the accessible route are not required to exceed 20 percent of the costs of the alterations affecting the area of primary function.
2. This provision does not apply to alterations limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to alterations limited solely to mechanical systems, electrical systems, installation or alteration of fire protection systems and abatement of hazardous materials.
4. This provision does not apply to alterations undertaken for the primary purpose of increasing the accessibility of an existing building, facility or element.

**CHAPTER 7
ALTERATIONS—LEVEL 2**

**SECTION 705
MEANS OF EGRESS**

705.1 Scope. The requirements of this section shall be limited to work areas that include exits or corridors shared by more than one tenant within the work area in which Level 2 alterations are being performed, and where specified they shall apply throughout the floor on which the work areas are located or otherwise beyond the work area.

705.2 General. The means of egress shall comply with the requirements of this section.

Exceptions:

1. Where the work area and the means of egress serving it complies with NFPA 101.
2. Means of egress conforming to the requirements of the building code under which the building was constructed shall be considered compliant means of egress if, in the opinion of the code official, they do not constitute a distinct hazard to life.
3. The altered element or space is not required to provide accessible means of egress, unless required by Section 805.4.

705.3 Number of exits. The number of exits shall be in accordance with Sections 705.3.1 through 705.3.3.

705.3.1 Minimum number. Every story utilized for human occupancy on which there is a work area that includes exits or corridors shared by more than one tenant within the work area shall be provided with the minimum number of exits based on the occupancy and the occupant load in accordance with the *International Building Code*. In addition, the exits shall comply with Sections 705.3.1.1 and 705.3.1.2.

**SECTION 706
ACCESSIBILITY**

706.1 General. A building, facility, or element that is altered shall comply with Section 605 and 706.

706.2 Stairs and escalators in existing buildings. In alterations where an escalator or stair is added where none existed previously, an accessible route shall be provided in accordance with Sections 1104.4 and 1104.5 of the *International Building Code*.

706.3 Accessible dwelling units and sleeping units. Where Group I-1, I-2, I-3, R-1, R-2 or R-4 dwelling or sleeping units are being added, the requirements of Section 1107 of the *International Building Code* for accessible units and Chapter 9 of the *International Building Code* for visible alarms apply only to the quantity of spaces being added.

706.4 Type A dwelling or sleeping units. Where more than 20 Group R-2 dwelling or sleeping units are being added, the requirements of Section 1107 of the *International Building Code* for Type A units and Chapter 9 of the *International Building Code* for visible alarms apply only to the quantity of the spaces being added.

706.5 Type B dwelling or sleeping units. Where four or more Group I-1, I-2, R-1, R-2, R-3 or R-4 dwelling or sleeping units are being added, the requirements of Section 1107 of the *International Building Code* for Type B units and Chapter 9 of the *International Building Code* for visible alarms apply only to the quantity of the spaces being added.

CHAPTER 8 ALTERATIONS—LEVEL 3

SECTION 805 MEANS OF EGRESS

805.1 General. The means of egress shall comply with the requirements of Section 705 except as specifically required in Sections 805.2 and 805.3.

805.2 Means-of-egress lighting. Means of egress from the highest work area floor to the floor of exit discharge shall be provided with artificial lighting within the exit enclosure in accordance with the requirements of the *International Building Code*.

805.3 Exit signs. Means of egress from the highest work area floor to the floor of exit discharge shall be provided with exit signs in accordance with the requirements of the *International Building Code*.

805.4 Accessible means of egress. Additions and buildings or portions thereof undergoing a change of occupancy or alterations shall provide accessible means of egress in accordance with Section 805.4.1 and Section 1007 of the *International Building Code*.

Exceptions:

1. Accessible means of egress is not required in existing buildings where the alterations are less than Level 3.
2. Accessible means of egress is not required in existing building undergoing a change of occupancy where the change or occupancy is in conjunction with alterations that are less than Level 3.

805.4.1 Means of egress through the existing building. Where the accessible means of egress from any portion of a building being altered, undergoing a change of occupancy or addition requires occupants to egress through portions of the existing building, compliance with Section 1007 of the *International Building Code* is required, unless technically infeasible. Where compliance with this provision is *technically infeasible*, the accessible means of egress through the existing building shall provide access to the maximum extent technically feasible.

SECTION 806 ACCESSIBILITY

806.1 General. A building, facility or element that is altered shall comply with Sections 605 and 706.

CHAPTER 9 CHANGE OF OCCUPANCY

SECTION 905 MEANS OF EGRESS

905.1 General. Means of egress in portions of buildings undergoing a change of occupancy classification shall comply with Section 912.

SECTION 906 ACCESSIBILITY

906.1 General. Accessibility in portions of buildings undergoing a change of occupancy classification shall comply with Section 912.8.

**SECTION 912
CHANGE OF OCCUPANCY CLASSIFICATION**

912.4 Means of egress, general. Hazard categories in regard to life safety and means of egress shall be in accordance with Table 912.4.

**TABLE 912.4
MEANS OF EGRESS HAZARD CATEGORIES**

RELATIVE HAZARD	OCCUPANCY CLASSIFICATIONS
1 (Highest Hazard)	H
2	I-2, I-3, I-4
3	A, E, I-1, M, R-1, R-2, R-4
4	B, F-1, R-3, S-1
5 (Lowest Hazard)	F-2, S-2, U

912.4.1 Means of egress for change to higher hazard category. When a change of occupancy classification is made to a higher hazard category (lower number) as shown in Table 912.4, the means of egress shall comply with the requirements of Chapter 10 of the *International Building Code*.

Exceptions:

1. Stairways shall be enclosed in compliance with the applicable provisions of Section 803.1.
2. Existing stairways including handrails and guards complying with the requirements of Chapter 8 shall be permitted for continued use subject to approval of the code official.
3. Any stairway replacing an existing stairway within a space where the pitch or slope cannot be reduced because of existing construction shall not be required to comply with the maximum riser height and minimum tread depth requirements.
4. Existing corridor walls constructed of wood lath and plaster in good condition or 1/2-inch-thick (12.7 mm) gypsum wallboard shall be permitted. Such walls shall either terminate at the underside of a ceiling of equivalent construction or extend to the underside of the floor or roof next above.
5. Existing corridor doorways, transoms and other corridor openings shall comply with the requirements in Sections 705.5.1, 705.5.2 and 705.5.3.
6. Existing dead-end corridors shall comply with the requirements in Section 705.6.
7. An existing operable window with clear opening area no less than 4 square feet (0.38 m²) and minimum opening height and width of 22 inches (559 mm) and 20 inches (508 mm), respectively, shall be accepted as an emergency escape and rescue opening.
8. Accessible means of egress is not required for areas undergoing a change of occupancy unless required by Section 805.4.

912.4.2 Means of egress for change of use to equal or lower hazard category. When a change of occupancy classification is made to an equal or lesser hazard category (higher number) as shown in Table 912.4, existing elements of the means of egress shall comply with the requirements of Section 805 for the new occupancy classification. Newly constructed or configured means of egress shall comply with the requirements of Chapter 10 of the *International Building Code*.

Exceptions:

1. Any stairway replacing an existing stairway within a space where the pitch or slope cannot be reduced because of existing construction shall not be required to comply with the maximum riser height and minimum tread depth requirements.
2. Accessible means of egress is not required for areas undergoing a change of occupancy unless required by Section 805.4.

912.4.3 Egress capacity. Egress capacity shall meet or exceed the occupant load as specified in the *International Building Code* for the new occupancy.

912.4.4 Handrails. Existing stairways shall comply with the handrail requirements of Section 705.9 in the area of the change of occupancy classification.

912.4.5 Guards. Existing guards shall comply with the requirements in Section 705.10 in the area of the change of occupancy classification.

912.8 Accessibility. Existing buildings that undergo a change of group or occupancy classification shall comply with this section.

912.8.1 Partial change in occupancy. Where a portion of the building is changed to a new occupancy classification, any alterations shall comply with Sections 605 and 706, as applicable.

912.8.2 Complete change of occupancy. Where an entire building undergoes a change of occupancy, it shall comply with Section 912.8.1 and shall have all of the following accessible features unless technically infeasible. Where compliance with this provision is technically infeasible, provide access to the maximum extent technically feasible.

1. At least one accessible building entrance.
2. At least one accessible route from an accessible building entrance to primary function areas.
3. Signage complying with Section 1110 of the *International Building Code*.
4. Accessible parking, where parking is provided.
5. At least one accessible passenger loading zone, where loading zones are provided.
6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.

Where it is technically infeasible to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.

CHAPTER 10 ADDITIONS

SECTION 1004 MEANS OF EGRESS

1004.1 General. The means of egress shall comply with the requirements of Chapter 10 of the *International Building Code*.

Exception: Accessible means of egress is not required for additions unless required by Section 805.4.

SECTION 1005 ACCESSIBILITY

1005.1 Minimum requirements. Accessibility provisions for new construction shall apply to additions. An addition that affects the accessibility to, or contains an area of, primary function shall comply with the requirements of Sections 605, and 706 and 806, as applicable.

CHAPTER 11 HISTORIC BUILDINGS

SECTION 1103 FIRE SAFETY

1103.1 Scope. Historic buildings undergoing alterations, changes of occupancy, or that are moved shall comply with Section 1103.

1103.2 General. Every historic building that does not conform to the construction requirements specified in this code for the occupancy or use and that constitutes a distinct fire hazard as defined herein shall be provided with an approved automatic fire-extinguishing system as determined appropriate by the code official. However, an automatic fire-extinguishing system shall not be used to substitute for, or act as an alternative to, the required number of exits from any facility.

1103.3 Means of egress. Existing door openings and corridor and stairway widths less than those specified elsewhere in this code may be approved, provided that, in the opinion of the code official, there is sufficient width and height for a

person to pass through the opening or traverse the means of egress. When approved by the code official, the front or main exit doors need not swing in the direction of the path of exit travel, provided that other approved means of egress having sufficient capacity to serve the total occupant load are provided.

Exception: Accessible means of egress are not required in historic buildings being altered or undergoing a change of occupancy.

SECTION 1104 ALTERATIONS

1104.1 Accessibility requirements. The provisions of 605 and 706, as applicable, shall apply to buildings and facilities designated as historic structures that undergo alterations, unless technically infeasible. Where compliance with the requirements for accessible routes, entrances or toilet facilities would threaten or destroy the historic significance of the building or facility, as determined by the code official, the alternative requirements of Sections 1104.1.1 through 1104.1.4 for that element shall be permitted.

1104.1.1 Site arrival points. At least one main entrance shall be accessible.

1104.1.2 Multilevel buildings and facilities. An accessible route from an accessible entrance to public spaces on the level of the accessible entrance shall be provided.

1104.1.3 Entrances. At least one main entrance shall be accessible.

Exceptions:

1. If a main entrance cannot be made accessible, an accessible nonpublic entrance that is unlocked while the building is occupied shall be provided; or
2. If a main entrance cannot be made accessible, a locked accessible entrance with a notification system or remote monitoring shall be provided.

1104.1.4 Toilet and bathing facilities. Where toilet rooms are provided, at least one accessible family or assisted-use toilet room complying with Section 1109.2.1 of the *International Building Code* shall be provided.

SECTION 1105 CHANGE OF OCCUPANCY

1105.6 Means of egress. Existing door openings and corridor and stairway widths less than those that would be acceptable for nonhistoric buildings under these provisions shall be approved, provided that, in the opinion of the code official, there is sufficient width and height for a person to pass through the opening or traverse the exit and that the capacity of the exit system is adequate for the occupant load, or where other operational controls to limit occupancy are approved by the code official.

Exception: Accessible means of egress are not required in historic buildings undergoing a change of occupancy.

1105.15 Accessibility requirements. The provisions of Section 912.8 shall apply to buildings and facilities designated as historic structures that undergo a change of occupancy, unless technically infeasible. Where compliance with the requirements for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historic significance of the building or facility, as determined by the authority having jurisdiction, the alternative requirements of Sections 1104.1.1 through 1104.1.5 for those elements shall be permitted.

Reason: The interplay between an existing building and additions or alterations is not well defined. While the text is clear that the addition is required to meet the accessibility provisions it is not clear how the addition will impact the accessibility requirements for the existing building. Similarly, although the statement exists that alterations do not require a retroactive requirement for accessible means of egress, this statement negates the scope of the alteration. Federal Accessibility regulations and common sense dictate that where major changes occur consideration for the accessible means of egress should also occur. Additionally, the simple idea that accessibility should be intentionally denied to a segment of the population does not seem appropriate. The proposal seeks to finesse some of these issues.

It is important to remember that the requirements in the IBC only require a maximum of two accessible means of egress (based on travel distance limitations) as noted in Section 1007.1. And, an elevator can be counted as being one of the accessible means of egress. Thus, it may be easier in some cases to provide an accessible means of egress than one that fully complies with the requirements for new construction.

Some sections shown do not contain changes, but were shown for context and appropriate referencing.

IEBC:

In addition to the items noted above which relate to only Chapter 3, specific direction is provided for each condition as elaborated in the various chapters of the IEBC. Chapter 3 of the IEBC parallels Chapter 34 in the IBC. However, the IEBC also contains provisions that are more in depth than the prescriptive methods described.

The existing language is maintained that requires repairs to not reduce the level of current accessibility; but there is no additional requirement for accessibility in Chapter 5.

605.1, exception #2: Rather than refer to the IBC, specific provisions are being added to the IEBC. The wording is changed to reflect that.

705.2, exception #3: Similar to 605.1, reference to the accessible means of egress is added to allow the code user to understand where the scope of changes will require work in this area. Without this exception, it is unclear whether the reference to making the means of egress comply is intended to include the accessible means of egress as well as other aspects of egress design.

706.1: A reflective reference is added which was lacking. Compliance with another section was mandated but not the section itself.

805.4: The language and intent is the same as noted above for IEBC Section 310.8 and its two exceptions. The exceptions in this case use the language of the IEBC which define the level of work in more definitive terms – using Levels to describe the threshold rather than percentages of work.

805.4.1: This language is replicating that noted above from Section 310.8.1 relative to egress through an existing building.

912.4.1, exception #8: The added exception continues the scoping by including with the Change of Occupancy Chapter a reference back to the main section addressing when accessible means of egress must be provided – 805.4.

912.4.2, exception #2: A new exception is added to this section so that it is clear that whether the change in occupancy is to a higher category or lower category, the requirement to provide accessible means of egress is found in Section 805.4.

912.8.2: This added language does not address accessible means of egress. It addresses the consistent recognition of technical infeasibility. The language informs the code user of this application as it relates to changes in occupancy.

1004.1: Chapter 10 (Additions) does not address means of egress specifically. A reference to compliance with the means of egress provisions in Chapter 10 of the IBC is included. This is consistent with the first sentence in Section 302.1. The added language is inserted before the accessibility section in like manner to other chapters.

1004.1, exception: The exception is consistent with the other changes noted above that refer to Section 805.4 for the thresholds for compliance with the accessible means of egress requirements.

1005.1: Reference is currently provided to the sections relative to accessibility in Chapter 6 and 7 but not 8. The proposal corrects that.

1105.6: Similar to the language in 3411.10 in the IBC, this clearly indicates that accessible means of egress is not required for historic buildings.

IBC/IEBC:

1007.1: The section is changed to indicate that existing building provisions are noted in Chapter 34. This is the proper scoping location for issues dealing with existing buildings – not Chapter 10.

3411.4/310.4: A cross reference is added to direct the code user to the central location for issues relative to existing buildings and accessible means of egress; the proposed 3411.8.

3411.4.2/310.4.2: The paragraph following the text already mentions what happens when the effort is “technically infeasible” but there is no language that states that these items are limited to conditions where technical infeasibility is not a problem. The added language clarifies the intent with respect to technical infeasibility.

3411.5/310.5: A cross reference to the section addressing accessible means of egress is added.

3411.6/310.6: Where accessible means of egress are required, it is necessary to direct the code user to the proper section. The reference to 1007 does that.

3411.6/310.6, exception #2: The exception seems to imply that nothing is required for the existing building relative to accessible means of egress. However, since the addition is impacting the existing building, the egress through the existing building is more similar to an alteration of the existing egress system. The revised text points to the central section addressing what must be done.

3411.8/310.8: A new section is added to specifically address the accessible means of egress. Rather than the blanket statement in Section 1007.1 of the building code, this section will address the scope and extent of work necessary to address accessible means of egress. It directs the code user to Section 1007 for the technical requirements when an accessible means of egress is necessary as well as clearly delineate that when a change of occupancy or alteration occurs, the accessible means of egress must be provided. This is no different than the general requirements in 3404.1/303.1 and 3408.1/307.1 which require alterations and changes in occupancy to meet “new code.”

3411.8/310.8, exception #1: Alterations with some magnitude should address accessible means of egress, if the alteration is relatively small then there is reason to limit the requirement. The threshold of 50% of the building area is intended to delineate the difference between IEBC Alterations – Level 2 and Alterations – Level 3

3411.8/310.8, exception #2: Similarly, if the change in occupancy is only to a portion of the building, full compliance with the accessible means of egress is not required. The position should be that if the occupancy is totally changed then the building should be made to comply with the new requirements. For “regular” egress this may mean that the occupant load changes resulting in wider or additional stairways. The least that should be done is to make an effort to provide accessible means of egress.

3411.8.1/310.8.1: If an addition is designed such that the means of egress must enter the existing building then the egress design must meet the requirements for the addition as it passes through the existing building. As this relates to egress design, it includes a continuation of the design in the addition for egress width, corridor protection, panic hardware (as applicable) and similar concerns. The same should be true for the design of the accessible means of egress. If one of the accessible egress paths leads through the existing building, it too needs to meet/continue the level of protection as designed in the addition. The limitation to this is if the effort to make the existing means of egress accessible is “technically infeasible” then work should be done to what is possible. One example of this may be making sure that the slopes along the path in the existing building’s corridor are proper even if the width cannot be altered to allow the proper approach to the exit door.

3411.10: The language requires compliance with the accessible means of egress as written with the only defense being the “technically infeasible” option. The exception makes it clear that for historic buildings undergoing major alterations of a change in occupancy an accessible means of egress is not required.

A companion change is being proposed for the IEBC so that the changes here are reflected in that code as well.

While more can always be done if possible, the code identifies the minimums necessary for life safety. The proposed changes identify what is appropriate so that the disabled community has similar levels of life safety to the general public and still sets reasonable thresholds based on the extent of work for the project. The standard of “technical infeasible” is identified clearly in new sections where it may have been interpreted previously as not applying. The “20% of the cost” criteria identified in 3411.7, exception #1 of the IBC (605.2, exception #1 of the IEBC) relative to alterations affecting the primary function is also maintained.

Cost Impact: The code change proposal will increase the cost of construction.

ICCFILENAME: BOECKER-E5-1007.1

Public Hearing Results

PART I - IEBC

Committee Action:

Disapproved

Committee Reason: The committee felt that exception 8 to Section 912.4.1 was confusing in its reference back to 805.4 where it discussed changes of occupancy in a chapter about alterations. Further, Section 805.4 does not contain the current 20 percent cost limitation. Without this limit the costs will get unreasonable.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Gene Boecker, representing Code Consultants, Inc., requests Approval as Submitted.

Commenter's Reason: The committee did not vote to disapprove based on the concept but on a misunderstanding of what the Existing Building Code already allows. The prime comment was the mention that 20 percent cost limitation was not included in the referenced Section 805.4. The reason is that it already exists. Section 805 of the Existing Building Code requires compliance with Section 605; and, Section 605 clearly already contains the 20 percent limitation provision. It isn't included in 805 because it isn't needed. One comment by the committee felt that the reference from 912.4.1 to 805.4 was confusing. I am not sure how that is confusing since the codes make reference to other sections all the time.

An additional comment was the question of cost to which there are two answers. First, there is the 20 percent rule which exists although the committee did not recognize that at the time. Second, there will be additional cost. That is not to be denied. The question is whether or not it is within the power of the ICC to make the accessible means of egress available in existing buildings. If the ICC is intent on Life Safety then it is important that the organization address the fact that there are currently only requirements for accessible means of egress in new construction while we acknowledge a potential loss of a portion of our population by ignoring accessible means of egress in existing buildings. I maintain that the ICC does care and that it is the proper place to address this deficiency in life safety needs.

Questions about whether this is in conflict with the federal guidelines are in error. The proposed language in the new ADA guidelines recognize the International Code Council as the expert in addressing means of egress, deferring to the ICC those decisions on how best to provide life safety in the form of means of egress to those individuals with disabilities. It is time we take a position to include at least some effort to address accessible means of egress in existing buildings. We strain over much greater minutia than this. I urge the membership to do the right thing and approve this proposal as submitted.

Final Action: AS AM AMPC____ D

EB10-09/10, Part II

IEBC 605.1, 705.2, 706.1, 805.4 (New), 805.4.1 (New), 912.4.1, 912.4.2, 912.8.2, 1004.1(New), 1005.1, 1103.3, 1105.6; IBC 3411.4, 3411.4.1, 3411.4.2, 3411.5, 3411.6, 3411.8(New), 3411.8.1(New), 3411.9; (IEBC [B] 310.4, 310.4.1, 310.4.2, 310.5, 310.6, 310.8(New), 310.8.1 (New), 310.9), 1007.1 (IFC [B] 1007.1)

Proponent: Gene Boecker, Code Consultants, Inc.

Proposed Change as Submitted

PART II – IBC GENERAL

3411.4 (IEBC [B] 310.4) Change of occupancy. Existing buildings that undergo a change of group or occupancy shall comply with this section. Accessible means of egress shall be provided in accordance with Section 3411.8.

3411.4.1 (IEBC [B] 310.4.1) Partial change in occupancy. Where a portion of the building is changed to a new occupancy classification, any alterations shall comply with Sections 3411.6, 3411.7, ~~and~~ 3411.8 and 3411.9.

3411.4.2 (IEBC [B] 310.4.2) Complete change of occupancy. Where an entire building undergoes a change of occupancy, it shall comply with Section 3411.4.1 and shall have all the following accessible features unless technically infeasible. Where compliance with this provision is technically infeasible, provide access to the maximum extent technically feasible.

1. At least one accessible building entrance.

2. At least one accessible route from an accessible building entrance to primary function areas.
3. Signage complying with Section 1110.
4. Accessible parking, where parking is provided.
5. At least one accessible passenger loading zone, when loading zones are provided.
6. At least on accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.

3411.5 (IEBC [B] 310.5) Additions. Provisions for new construction shall apply to additions. An addition that affects the accessibility to, or contains an area of, a primary function shall comply with the requirements in Section 3411.7 and 3411.8.

3411.6 (IEBC [B] 310.6) Alterations. A building, facility or element that is altered shall comply with the applicable provisions in Section 1007, Chapter 11 of this code and ICC A117.1, unless technically infeasible. Where compliance with this section is technically infeasible, the alteration shall provide access to the maximum extent technically feasible.

Exceptions:

1. The altered element or space is not required to be on an accessible route, unless required by Section 3411.7.
2. Accessible means of egress required by Chapter 10 are not required to be provided in existing buildings and facilities being altered unless required by Section 3411.8.
3. The alteration to Type A individually owned dwelling units within a Group R-2 occupancy shall meet the provision for a Type B dwelling unit and shall comply with the applicable provisions in Chapter 11 and ICC A117.1.

3411.7 (IEBC [B] 310.7) Alterations affecting an area containing a primary function. Where an alteration affects the accessibility to, or contains an area of primary function, the route to the primary function area shall be accessible. The accessible route to the primary function area shall include toilet facilities or drinking fountains serving the area of primary function.

Exceptions:

1. The costs of providing the accessible route are not required to exceed 20 percent of the costs of the alterations affecting the area of primary function.
2. This provision does not apply to alterations limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to alterations limited solely to mechanical systems, electrical systems, installation or alteration of fire protection systems and abatement of hazardous materials.
4. This provision does not apply to alterations undertaken for the primary purpose of increasing the accessibility of an existing building, facility or element.

3411.8 (IEBC [B] 310.8) Accessible means of egress. Additions and buildings or portions thereof undergoing a change of occupancy or alterations shall provide accessible means of egress in accordance with Sections 1007 and 3411.8.1.

Exceptions:

1. Accessible means of egress is not required in existing buildings where the alterations are less than 50 percent of the aggregate building area.
2. Accessible means of egress is not required in existing building undergoing a change of occupancy where the change or occupancy is in conjunction with alterations that are less than 50 percent of the aggregate building area.

3411.8.1 (IEBC [B] 310.8.1) Means of egress through the existing building. Where the accessible means of egress from any portion of a building being altered, undergoing a change of occupancy or addition requires occupants to egress through portions of the existing building, compliance with Section 1007 is required, unless technically infeasible. Where compliance with this provision is technically infeasible, the accessible means of egress through the existing building shall provide access to the maximum extent technically feasible.

(Renumber subsequent sections)

3411.9 3411.10 (IEBC [B] 310.9 310.10) Historic buildings. These provisions shall apply to buildings and facilities designated as historic structures that undergo alterations or a change of occupancy, unless *technically infeasible*. Where compliance with the requirements for *accessible* routes, entrances or toilet facilities would threaten or destroy

the historic significance of the building or facility, as determined by the applicable governing authority, the alternative requirements of Sections ~~3411.9.4~~ 3411.10.1 through ~~3411.9.4~~ 3411.10.4 for that element shall be permitted.

Exception: Accessible means of egress are not required in historic buildings being altered or undergoing a change of occupancy.

(Renumber subsequent sections)

Reason: The interplay between an existing building and additions or alterations is not well defined. While the text is clear that the addition is required to meet the accessibility provisions it is not clear how the addition will impact the accessibility requirements for the existing building. Similarly, although the statement exists that alterations do not require a retroactive requirement for accessible means of egress, this statement negates the scope of the alteration. Federal Accessibility regulations and common sense dictate that where major changes occur consideration for the accessible means of egress should also occur. Additionally, the simple idea that accessibility should be intentionally denied to a segment of the population does not seem appropriate. The proposal seeks to finesse some of these issues.

It is important to remember that the requirements in the IBC only require a maximum of two accessible means of egress (based on travel distance limitations) as noted in Section 1007.1. And, an elevator can be counted as being one of the accessible means of egress. Thus, it may be easier in some cases to provide an accessible means of egress than one that fully complies with the requirements for new construction.

Some sections shown do not contain changes, but were shown for context and appropriate referencing.

IEBC:

In addition to the items noted above which relate to only Chapter 3, specific direction is provided for each condition as elaborated in the various chapters of the IEBC. Chapter 3 of the IEBC parallels Chapter 34 in the IBC. However, the IEBC also contains provisions that are more in depth than the prescriptive methods described.

The existing language is maintained that requires repairs to not reduce the level of current accessibility; but there is no additional requirement for accessibility in Chapter 5.

605.1, exception #2: Rather than refer to the IBC, specific provisions are being added to the IEBC. The wording is changed to reflect that.

705.2, exception #3: Similar to 605.1, reference to the accessible means of egress is added to allow the code user to understand where the scope of changes will require work in this area. Without this exception, it is unclear whether the reference to making the means of egress comply is intended to include the accessible means of egress as well as other aspects of egress design.

706.1: A reflective reference is added which was lacking. Compliance with another section was mandated but not the section itself.

805.4: The language and intent is the same as noted above for IEBC Section 310.8 and its two exceptions. The exceptions in this case use the language of the IEBC which define the level of work in more definitive terms – using Levels to describe the threshold rather than percentages of work.

805.4.1: This language is replicating that noted above from Section 310.8.1 relative to egress through an existing building.

912.4.1, exception #8: The added exception continues the scoping by including with the Change of Occupancy Chapter a reference back to the main section addressing when accessible means of egress must be provided – 805.4.

912.4.2, exception #2: A new exception is added to this section so that it is clear that whether the change in occupancy is to a higher category or lower category, the requirement to provide accessible means of egress is found in Section 805.4.

912.8.2: This added language does not address accessible means of egress. It addresses the consistent recognition of technical infeasibility. The language informs the code user of this application as it relates to changes in occupancy.

1004.1: Chapter 10 (Additions) does not address means of egress specifically. A reference to compliance with the means of egress provisions in Chapter 10 of the IBC is included. This is consistent with the first sentence in Section 302.1. The added language is inserted before the accessibility section in like manner to other chapters.

1004.1, exception: The exception is consistent with the other changes noted above that refer to Section 805.4 for the thresholds for compliance with the accessible means of egress requirements.

1005.1: Reference is currently provided to the sections relative to accessibility in Chapter 6 and 7 but not 8. The proposal corrects that.

1105.6: Similar to the language in 3411.10 in the IBC, this clearly indicates that accessible means of egress is not required for historic buildings.

IBC/IEBC:

1007.1: The section is changed to indicate that existing building provisions are noted in Chapter 34. This is the proper scoping location for issues dealing with existing buildings – not Chapter 10.

3411.4/310.4: A cross reference is added to direct the code user to the central location for issues relative to existing buildings and accessible means of egress; the proposed 3411.8.

3411.4.2/310.4.2: The paragraph following the text already mentions what happens when the effort is “technically infeasible” but there is no language that states that these items are limited to conditions where technical infeasibility is not a problem. The added language clarifies the intent with respect to technical infeasibility.

3411.5/310.5: A cross reference to the section addressing accessible means of egress is added.

3411.6/310.6: Where accessible means of egress are required, it is necessary to direct the code user to the proper section. The reference to 1007 does that.

3411.6/310.6, exception #2: The exception seems to imply that nothing is required for the existing building relative to accessible means of egress. However, since the addition is impacting the existing building, the egress through the existing building is more similar to an alteration of the existing egress system. The revised text points to the central section addressing what must be done.

3411.8/310.8: A new section is added to specifically address the accessible means of egress. Rather than the blanket statement in Section 1007.1 of the building code, this section will address the scope and extent of work necessary to address accessible means of egress. It directs the code user to Section 1007 for the technical requirements when an accessible means of egress is necessary as well as clearly delineate that when a change of occupancy or alteration occurs, the accessible means of egress must be provided. This is no different than the general requirements in 3404.1/303.1 and 3408.1/307.1 which require alterations and changes in occupancy to meet “new code.”

3411.8/310.8, exception #1: Alterations with some magnitude should address accessible means of egress, if the alteration is relatively small then there is reason to limit the requirement. The threshold of 50% of the building area is intended to delineate the difference between IEBC Alterations – Level 2 and Alterations – Level 3

3411.8/310.8, exception #2: Similarly, if the change in occupancy is only to a portion of the building, full compliance with the accessible means of egress is not required. The position should be that if the occupancy is totally changed then the building should be made to comply with the new

requirements. For “regular” egress this may mean that the occupant load changes resulting in wider or additional stairways. The least that should be done is to make an effort to provide accessible means of egress.

3411.8.1/310.8.1: If an addition is designed such that the means of egress must enter the existing building then the egress design must meet the requirements for the addition as it passes through the existing building. As this relates to egress design, it includes a continuation of the design in the addition for egress width, corridor protection, panic hardware (as applicable) and similar concerns. The same should be true for the design of the accessible means of egress. If one of the accessible egress paths leads through the existing building, it too needs to meet/continue the level of protection as designed in the addition. The limitation to this is if the effort to make the existing means of egress accessible is “technically infeasible” then work should be done to what is possible. One example of this may be making sure that the slopes along the path in the existing building’s corridor are proper even if the width cannot be altered to allow the proper approach to the exit door.

3411.10: The language requires compliance with the accessible means of egress as written with the only defense being the “technically infeasible” option. The exception makes it clear that for historic buildings undergoing major alterations of a change in occupancy an accessible means of egress is not required.

A companion change is being proposed for the IEBC so that the changes here are reflected in that code as well.

While more can always be done if possible, the code identifies the minimums necessary for life safety. The proposed changes identify what is appropriate so that the disabled community has similar levels of life safety to the general public and still sets reasonable thresholds based on the extent of work for the project. The standard of “technical infeasible” is identified clearly in new sections where it may have been interpreted previously as not applying. The “20% of the cost” criteria identified in 3411.7, exception #1 of the IBC (605.2, exception #1 of the IEBC) relative to alterations affecting the primary function is also maintained.

Cost Impact: The code change proposal will increase the cost of construction.

ICCFILENAME: BOECKER-E5-1007.1

Public Hearing Results

PART II – IBC GENERAL

Committee Action:

Disapproved

Committee Reason: The committee felt that as with EB10-09/10 Part I this proposal does not adequately address costs involved with providing accessibility to existing buildings

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Gene Boecker, representing Code Consultants, Inc., requests Approval as Submitted.

Commenter’s Reason: See EB10-09/10, Part I

Final Action: AS AM AMPC____ D

EB10-09/10, Part III

IEBC 605.1, 705.2, 706.1, 805.4 (New), 805.4.1 (New), 912.4.1, 912.4.2, 912.8.2, 1004.1(New), 1005.1, 1103.3, 1105.6; IBC 3411.4, 3411.4.1, 3411.4.2, 3411.5, 3411.6, 3411.8(New), 3411.8.1(New), 3411.9; (IEBC [B] 310.4, 310.4.1, 310.4.2, 310.5, 310.6, 310.8(New), 310.8.1 (New), 310.9), 1007.1 (IFC [B] 1007.1)

Proposed Change as Submitted

Revise as follows:

1007.1 (IFC [B] 1007.1) Accessible means of egress required. Accessible means of egress shall comply with this section. Accessible spaces shall be provided with not less than one accessible means of egress. Where more than one means of egress is required by Section 1015.1 or 1021.1 from any accessible space, each accessible portion of the space shall be served by not less than two accessible means of egress.

Exceptions:

1. Accessible means of egress ~~are not required in alterations to~~ for existing buildings shall be provided as required in Section 3411.8.
2. One accessible means of egress is required from an accessible mezzanine level in accordance with Section 1007.3, 1007.4 or 1007.5.
3. In assembly areas with sloped or stepped aisles, one accessible means of egress is permitted where the common path of travel is accessible and meets the requirements in Section 1028.8.

Reason: The interplay between an existing building and additions or alterations is not well defined. While the text is clear that the addition is required to meet the accessibility provisions it is not clear how the addition will impact the accessibility requirements for the existing building. Similarly, although the statement exists that alterations do not require a retroactive requirement for accessible means of egress, this statement negates the scope of the alteration. Federal Accessibility regulations and common sense dictate that where major changes occur consideration for the accessible means of egress should also occur. Additionally, the simple idea that accessibility should be intentionally denied to a segment of the population does not seem appropriate. The proposal seeks to finesse some of these issues.

It is important to remember that the requirements in the IBC only require a maximum of two accessible means of egress (based on travel distance limitations) as noted in Section 1007.1. And, an elevator can be counted as being one of the accessible means of egress. Thus, it may be easier in some cases to provide an accessible means of egress than one that fully complies with the requirements for new construction.

Some sections shown do not contain changes, but were shown for context and appropriate referencing.

IEBC:

In addition to the items noted above which relate to only Chapter 3, specific direction is provided for each condition as elaborated in the various chapters of the IEBC. Chapter 3 of the IEBC parallels Chapter 34 in the IBC. However, the IEBC also contains provisions that are more in depth than the prescriptive methods described.

The existing language is maintained that requires repairs to not reduce the level of current accessibility; but there is no additional requirement for accessibility in Chapter 5.

605.1, exception #2: Rather than refer to the IBC, specific provisions are being added to the IEBC. The wording is changed to reflect that.

705.2, exception #3: Similar to 605.1, reference to the accessible means of egress is added to allow the code user to understand where the scope of changes will require work in this area. Without this exception, it is unclear whether the reference to making the means of egress comply is intended to include the accessible means of egress as well as other aspects of egress design.

706.1: A reflective reference is added which was lacking. Compliance with another section was mandated but not the section itself.

805.4: The language and intent is the same as noted above for IEBC Section 310.8 and its two exceptions. The exceptions in this case use the language of the IEBC which define the level of work in more definitive terms – using Levels to describe the threshold rather than percentages of work.

805.4.1: This language is replicating that noted above from Section 310.8.1 relative to egress through an existing building.

912.4.1, exception #8: The added exception continues the scoping by including with the Change of Occupancy Chapter a reference back to the main section addressing when accessible means of egress must be provided – 805.4.

912.4.2, exception #2: A new exception is added to this section so that it is clear that whether the change in occupancy is to a higher category or lower category, the requirement to provide accessible means of egress is found in Section 805.4.

912.8.2: This added language does not address accessible means of egress. It addresses the consistent recognition of technical infeasibility. The language informs the code user of this application as it relates to changes in occupancy.

1004.1: Chapter 10 (Additions) does not address means of egress specifically. A reference to compliance with the means of egress provisions in Chapter 10 of the IBC is included. This is consistent with the first sentence in Section 302.1. The added language is inserted before the accessibility section in like manner to other chapters.

1004.1, exception: The exception is consistent with the other changes noted above that refer to Section 805.4 for the thresholds for compliance with the accessible means of egress requirements.

1005.1: Reference is currently provided to the sections relative to accessibility in Chapter 6 and 7 but not 8. The proposal corrects that.

1105.6: Similar to the language in 3411.10 in the IBC, this clearly indicates that accessible means of egress is not required for historic buildings.

IBC/IEBC:

1007.1: The section is changed to indicate that existing building provisions are noted in Chapter 34. This is the proper scoping location for issues dealing with existing buildings – not Chapter 10.

3411.4/310.4: A cross reference is added to direct the code user to the central location for issues relative to existing buildings and accessible means of egress; the proposed 3411.8.

3411.4.2/310.4.2: The paragraph following the text already mentions what happens when the effort is “technically infeasible” but there is no language that states that these items are limited to conditions where technical infeasibility is not a problem. The added language clarifies the intent with respect to technical infeasibility.

3411.5/310.5: A cross reference to the section addressing accessible means of egress is added.

3411.6/310.6: Where accessible means of egress are required, it is necessary to direct the code user to the proper section. The reference to 1007 does that.

3411.6/310.6, exception #2: The exception seems to imply that nothing is required for the existing building relative to accessible means of egress. However, since the addition is impacting the existing building, the egress through the existing building is more similar to an alteration of the existing egress system. The revised text points to the central section addressing what must be done.

3411.8/310.8: A new section is added to specifically address the accessible means of egress. Rather than the blanket statement in Section 1007.1 of the building code, this section will address the scope and extent of work necessary to address accessible means of egress. It directs the code user to Section 1007 for the technical requirements when an accessible means of egress is necessary as well as clearly delineate that when a change of occupancy or alteration occurs, the accessible means of egress must be provided. This is no different than the general requirements in 3404.1/303.1 and 3408.1/307.1 which require alterations and changes in occupancy to meet “new code.”

3411.8/310.8, exception #1: Alterations with some magnitude should address accessible means of egress, if the alteration is relatively small then there is reason to limit the requirement. The threshold of 50% of the building area is intended to delineate the difference between IEBC Alterations – Level 2 and Alterations – Level 3

3411.8/310.8, exception #2: Similarly, if the change in occupancy is only to a portion of the building, full compliance with the accessible means of egress is not required. The position should be that if the occupancy is totally changed then the building should be made to comply with the new requirements. For “regular” egress this may mean that the occupant load changes resulting in wider or additional stairways. The least that should be done is to make an effort to provide accessible means of egress.

3411.8.1/310.8.1: If an addition is designed such that the means of egress must enter the existing building then the egress design must meet the requirements for the addition as it passes through the existing building. As this relates to egress design, it includes a continuation of the design in the addition for egress width, corridor protection, panic hardware (as applicable) and similar concerns. The same should be true for the design of the accessible means of egress. If one of the accessible egress paths leads through the existing building, it too needs to meet/continue the level of protection as designed in the addition. The limitation to this is if the effort to make the existing means of egress accessible is “technically infeasible” then work should be done to what is possible. One example of this may be making sure that the slopes along the path in the existing building’s corridor are proper even if the width cannot be altered to allow the proper approach to the exit door.

3411.10: The language requires compliance with the accessible means of egress as written with the only defense being the “technically infeasible” option. The exception makes it clear that for historic buildings undergoing major alterations of a change in occupancy an accessible means of egress is not required.

A companion change is being proposed for the IEBC so that the changes here are reflected in that code as well.

While more can always be done if possible, the code identifies the minimums necessary for life safety. The proposed changes identify what is appropriate so that the disabled community has similar levels of life safety to the general public and still sets reasonable thresholds based on the extent of work for the project. The standard of “technical Infeasible” is identified clearly in new sections where it may have been interpreted previously as not applying. The “20% of the cost” criteria identified in 3411.7, exception #1 of the IBC (605.2, exception #1 of the IEBC) relative to alterations affecting the primary function is also maintained.

Cost Impact: The code change proposal will increase the cost of construction.

ICCFILENAME: BOECKER-E5-1007.1

Public Hearing Results

PART III – IBC MEANS OF EGRESS

Committee Action:

Disapproved

Committee Reason: Based on the action the committee took on EB10-09/10 Part II, this would be an improper reference. Therefore, the committee recommended disapproval.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Gene Boecker, representing Code Consultants, Inc., requests Approval as Submitted.

Commenter’s Reason: See EB10-09/10, Part I

Final Action: AS AM AMPC____ D

EB14-09/10, Part I

IEBC 605.1, 605.2, 706.1, 806.1, 806.2, 912.8, 912.8.2, 1005.1, 1104.1, 1105.15; IBC 3411.1, 3411.4, 3411.4.2, 3411.6, 3411.7, 3411.8.8, 3411.8.9, 3411.9, 3412.2.5 (IEBC [B] 310.1, 310.4, 310.4.2, 310.6, 310.7, 310.8.8, 310.8.9, 310.9, 1301.2.5)

Proposed Change as Submitted

Proponent: Dominic Marinelli, United Spinal Association

PART I – IEBC

Revise as follows:

CHAPTER 6 ALTERATIONS—LEVEL 1

SECTION 605 ACCESSIBILITY

605.1 General. A building, facility or element that is altered shall comply with the applicable provisions in Sections 605.1.1 through 605.1.14, Chapter 11 of the International Building Code and ICC A117.1 unless it is technically infeasible. Where compliance with this section is technically infeasible, the alteration shall provide access to the maximum extent that is technically feasible.

A building, facility or element that is constructed or altered to be accessible shall be maintained accessible during occupancy.

Exceptions:

1. The altered element or space is not required to be on an accessible route unless required by Section 605.2.
2. Accessible means of egress required by Chapter 10 of the International Building Code are not required to be provided in existing buildings and facilities.
3. Type B dwelling or sleeping units required by Section 1107 of the International Building Code are not required to be provided in existing buildings and facilities undergoing less than a Level III alteration.
4. The alteration to Type A individually owned dwelling units within a Group R-2 occupancy shall meet the provisions for Type B dwelling units and shall comply with the applicable provisions in Chapter 11 of the International Building Code and ICC A117.1.

605.1.8 Accessible dwelling or sleeping units. Where Group I-1, I-2, I-3, R-1, R-2 or R-4 dwelling or sleeping units are being altered, the requirements of Section 1107 of the International Building Code for accessible units and Chapter 9 of the International Building Code for visible alarms apply only to the quantity of the spaces being altered.

605.1.9 Type A dwelling or sleeping units. Where more than 20 Group R-2 dwelling or sleeping units are being altered, the requirements of Section 1107 of the International Building Code for Type A units and Chapter 9 of the International Building Code for visible alarms apply only to the quantity of the spaces being altered.

605.2 Alterations affecting an area containing a primary function. Where an alteration affects the accessibility to a, or contains an area of, primary function, the route to the primary function area shall be accessible. The accessible route to the primary function area shall include toilet facilities or drinking fountains serving the area of primary function.

Exceptions:

1. The costs of providing the accessible route are not required to exceed 20 percent of the costs of the alterations affecting the area of primary function.
2. This provision does not apply to alterations limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to alterations limited solely to mechanical systems, electrical systems, installation or alteration of fire protection systems and abatement of hazardous materials.
4. This provision does not apply to alterations undertaken for the primary purpose of increasing the accessibility of an existing building, facility or element.
5. This provision does not apply to altered areas limited to Type B dwelling and sleeping units.

CHAPTER 7 ALTERATIONS—LEVEL 2

SECTION 706 ACCESSIBILITY

706.1 General. A building, facility, or element that is altered shall comply with this section and Section 605.

706.3 Accessible dwelling units and sleeping units. Where Group I-1, I-2, I-3, R-1, R-2 or R-4 dwelling or sleeping units are being added, the requirements of Section 1107 of the International Building Code for accessible units and Chapter 9 of the International Building Code for visible alarms apply only to the quantity of spaces being added.

706.4 Type A dwelling or sleeping units. Where more than 20 Group R-2 dwelling or sleeping units are being added, the requirements of Section 1107 of the International Building Code for Type A units and Chapter 9 of the International Building Code for visible alarms apply only to the quantity of the spaces being added.

706.5 Type B dwelling or sleeping units. Where four or more Group I-1, I-2, R-1, R-2, R-3 or R-4 dwelling or sleeping units are being added, the requirements of Section 1107 of the International Building Code for Type B units and Chapter 9 of the International Building Code for visible alarms apply only to the quantity of the spaces being added.

CHAPTER 8 ALTERATIONS—LEVEL 3

SECTION 806 ACCESSIBILITY

806.1 General. A building, facility or element that is altered shall comply with this section and Sections 605 and 706.

806.2 Type B dwelling or sleeping units. Where four or more Group I-1, I-2, R-1, R-2, R-3 or R-4 dwelling or sleeping units are being altered or added the requirements of Section 1107 of the International Building Code for Type B units and Chapter 9 of the International Building Code for visible alarms apply only to the quantity of the spaces being altered or added.

CHAPTER 9 CHANGE OF OCCUPANCY

912.8 Accessibility. Existing buildings that undergo a change of group or occupancy classification shall comply with this section.

Exception: Type B dwelling or sleeping units required by Section 1107 of the International Building Code are not required to be provided in existing buildings and facilities undergoing a change of occupancy in conjunction with less than a Level III alteration.

912.8.1 Partial change in occupancy. Where a portion of the building is changed to a new occupancy classification, any alterations shall comply with Sections 605, ~~and~~ 706 and 806, as applicable.

912.8.2 Complete change of occupancy. Where an entire building undergoes a change of occupancy, it shall comply with Section 912.8.1 and shall have all of the following accessible features:

1. At least one accessible building entrance.
2. At least one accessible route from an accessible building entrance to primary function areas.
3. Signage complying with Section 1110 of the International Building Code.
4. Accessible parking, where parking is provided.
5. At least one accessible passenger loading zone, where loading zones are provided.
6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.

Where it is technically infeasible to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.

Exception: The accessible features listed in Items 1 through 6 are not required for an accessible route to Type B units.

CHAPTER 10 ADDITIONS

SECTION 1005 ACCESSIBILITY

1005.1 Minimum requirements. Accessibility provisions for new construction shall apply to additions. An addition that affects the accessibility to, or contains an area of, primary function shall comply with the requirements of Sections 605, ~~and~~ 706 and 806, as applicable.

CHAPTER 11 HISTORIC BUILDINGS

SECTION 1104 ALTERATIONS

1104.1 Accessibility requirements. The provisions of 605, ~~and 706~~ and 806, as applicable, shall apply to buildings and facilities designated as historic structures that undergo alterations, unless *technically infeasible*. Where compliance with the requirements for accessible routes, entrances or toilet facilities would threaten or destroy the historic significance of the building or facility, as determined by the *code official*, the alternative requirements of Sections 1104.1.1 through 1104.1.4 for that element shall be permitted.

Exception: Type B dwelling or sleeping units required by Section 1107 of the *International Building Code* are not required to be provided in historical buildings.

SECTION 1105 CHANGE OF OCCUPANCY

1105.15 Accessibility requirements. The provisions of Section 912.8 shall apply to buildings and facilities designated as historic structures that undergo a *change of occupancy*, unless *technically infeasible*. Where compliance with the requirements for accessible routes, ramps, entrances, or toilet facilities would threaten or destroy the historic significance of the building or facility, as determined by the authority having jurisdiction, the alternative requirements of Sections 1104.1.1 through 1104.1.5 for those elements shall be permitted.

Exception: Type B dwelling or sleeping units required by Section 1107 of the *International Building Code* are not required to be provided in historical buildings.

Reason: The intent of this proposal is to take a small step towards increasing the availability of housing with minimum accessibility requirements. With the fastest growing group in the United States being people over 65 years old, there is a definite need. The last U.S. Census information indicated that 41% of people of 65 have some level of disability.

Type of units covered under the Fair Housing Act include apartments, condominiums, dormitories, fraternities, sororities, convents, monasteries, assisted living facilities, nursing homes, group homes, etc. The Fair Housing Act is applicable to building first occupied after March 1991. While the department of Housing and Urban Development has been active in enforcement of these regulations, there are a lot of existing buildings that were constructed since 1991 that did not comply with this federal law. The legacy building codes first started requiring Type B units in apartments and condominiums in 1996/1997. With code changes that added congregate living facilities and Institutional facilities, the IBC requirements for Type B units was declared a 'safe harbor' document by HUD in 2002. Reasonably, buildings in jurisdictions that have adopted 2003 or 2006 IBC meet FHA. United Spinal's concern is the buildings that were built before that.

There are a considerable number of existing buildings that should have complied with FHA and did not. When a major alteration is being performed, there is a prime opportunity to have those buildings move towards compliance. This will not only be a benefit for people that need that housing to live in, but will also help the building owners lessen or avoid complaints filed under FHA. Also, this is the most cost effective opportunity to make these revisions.

What this proposal is asking for, is that when buildings are undergoing a Level 3 alteration, or a change of occupancy that includes a Level 3 alteration, that whatever elements are altered, those elements are brought up to meet Type B requirements. If the element is not part of the alteration, it is not required to be altered. This is consistent with current building code philosophy for alterations. There are still the allowances for technically infeasible. The exceptions for non-elevator buildings, site limitations and flood zones currently indicated in Section 1107.7 are still applicable under *Extent of Application* (IBC 3409.3, IEBC 310.3, 605.1.14). Historical buildings, by their reference back to general provisions could be affected, therefore a general exception for Type B units is proposed for historical buildings.

In addition, when the area being altered is for Type B units, there is an exception for the additional route requirements currently in IBC Sections 3411.4.2 and 3411.7 and IEBC Section 310.4.2, 310.7, 605.2 and 912.8.2. United Spinal hopes that this address the concerns of site impracticality brought up during the last hearings by the Building Owners Managers Association, the National Association of Home Builders and the National Multi-Housing Council. This also reinforces the intent that this provision is not meant to require elevators when alterations are performed on upper floors in non-elevator buildings (see exceptions in Section 1107.7). These areas would have been exempted if built new under FHA and IBC, and should continue to be exempted.

The intent is that the same requirements for housing in existing buildings are included in IBC and IEBC. The wording is slightly different because IBC does not include a definition for Level 3 alterations. The terminology used – "work areas exceeds 50 percent of the aggregate area of the building" - can be found in IEBC 405.1. Some sections included in this proposal are not revised, but are included for context.

Cost Impact: The code change proposal will increase the cost of construction

ICCFILENAME: MARINELLI-EB1-605.2.DOC

Public Hearing Results

PART I- IEBC

Committee Action:

Approved as Submitted

Committee Reason: The proposal was approved as it was felt that making the changes for Type B units were not that difficult. In addition this requirement would only apply for more substantial level III alterations and change of occupancy that involves level III alterations. There were some concerns expressed that approval of this proposal would exceed the fair housing requirements.

Assembly Action:

None

Individual Consideration Agenda

These items are on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Dominic Marinelli, representing United Spinal Association, requests Approval as Submitted.

Commenter's Reason: EB 14 requires existing residential buildings undergoing Level III alterations to comply with the requirements of the Federal Fair Housing Act Accessibility Guidelines and the Type B requirements of the A117.1 accessibility standard.

There is no trigger for compliance without significant work (50 percent of the aggregate area of the building) associated with a Level III alteration.

The requirement will also allow multiple dwellings that were originally required to comply with the Federal law but did not to take this opportunity to do so when significant work is being done anyways.

Exceptions dealing with existing conditions (i.e., site impracticality, technical infeasibility) are included to recognize hardships in providing an accessible route to an altered dwelling unit or achieving the clearances within the altered dwelling unit.

Public Comment 2:

Lawrence Brown, representing National Association of Home Builders (NAHB), requests Disapproval.

Commenter's Reason: The proposed change far exceeds the Federal Fair Housing Act (FHAct) requirements for accessibility and should be Disapproved. The I-Codes should be used for the purpose of providing construction requirements to address life-safety concerns, not as a vehicle to orchestrate social change. Of most importance is that the proposed Section 806.1, requiring compliance with IBC "Type B Units", is contrary to Federal law. First, the proposed change expands the Federal law that only multifamily "buildings" constructed for first occupancy after March 13, 1991 need to be constructed to the FHAct requirements. Second, this change would apply to ALL existing buildings converted to multifamily use, no matter when they were first constructed. But, Federal law does not require existing buildings to comply with the FHAct. Another problem is that this change seems to be an attempt to circumvent and nullify the FHAct and the rulings handed down by the Federal Courts. The FHAct Rules includes a two-year statute of limitations on bringing suit and making corrections to an existing non-compliant multifamily building, a statute of limitations being upheld by the Federal Circuit Courts of Appeals. There is also the aspect of Federal preemption. By adopting the proposed change the I-Codes will be contrary to Federal Law. As Federal Law will preempt any state or local law, there will be challenges to the adoption of this Code. There is no benefit for any state or local jurisdiction to have to fight a challenge in court if the adoption of the I-Codes contains this provision. It appears this proposal is an attempt by a department of the federal government to mandate social change without going through the Federal Administrative Procedure Act rulemaking process. If it is intended that HUD will be adding this type of provision to the requirements of the FHAct, then this type of requirement should not be included in the I-Codes until such time as they are enacted into Federal law.

Final Action: AS AM AMPC___ D

EB14-09/10, Part II

IEBC 605.1, 605.2, 706.1, 806.1, 806.2, 912.8, 912.8.2, 1005.1, 1104.1, 1105.15; IBC 3411.1, 3411.4, 3411.4.2, 3411.6, 3411.7, 3411.8.8, 3411.8.9, 3411.9, 3412.2.5 (IEBC [B] 310.1, 310.4, 310.4.2, 310.6, 310.7, 310.8.8, 310.8.9, 310.9, 1301.2.5)

Proposed Change as Submitted

PART II – IBC GENERAL

Revise as follows:

**SECTION 3411 (IEBC [B] 310)
ACCESSIBILITY FOR EXISTING BUILDINGS**

3411.1 (IEBC [B] 310.1) Scope. The provisions of Sections 3411.1 through 3411.9 apply to maintenance, change of occupancy, additions and alterations to existing buildings, including those identified as *historic buildings*.

Exception: ~~Type B dwelling or sleeping units required by Section 1107 of this code are not required to be provided in existing buildings and facilities being altered or undergoing a change of occupancy.~~

3411.4 (IEBC [B] 310.4) Change of occupancy. Existing buildings that undergo a change of group or occupancy shall comply with this section.

Exception: Type B dwelling or sleeping units required by Section 1107 of this code are not required to be provided in existing buildings and facilities undergoing a change of occupancy in conjunction with alterations where the work area is 50 percent or less of the aggregate area of the building.

3411.4.1 (IEBC [B] 310.4.1) Partial change in occupancy. Where a portion of the building is changed to a new occupancy classification, any alterations shall comply with Sections 3411.6, 3411.7 and 3411.8.

3411.4.2 (IEBC [B] 310.4.2) Complete change of occupancy. Where an entire building undergoes a change of occupancy, it shall comply with Section 3411.4.1 and shall have all of the following accessible features:

1. At least one accessible building entrance.
2. At least one accessible route from an accessible building entrance to primary function areas.
3. Signage complying with Section 1110.
4. Accessible parking, where parking is being provided.
5. At least one accessible passenger loading zone, when loading zones are provided.
6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.

Where it is technically infeasible to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.

Exception: The accessible features listed in Items 1 through 6 are not required for an accessible route to Type B units.

3411.5 (IEBC [B] 310.5) Additions. Provisions for new construction shall apply to additions. An addition that affects the accessibility to, or contains an area of, a primary function shall comply with the requirements in Section 3411.7.

3411.6 (IEBC [B] 310.6) Alterations. A building, facility or element that is altered shall comply with the applicable provisions in Chapter 11 of this code and ICC A117.1, unless technically infeasible. Where compliance with this section is technically infeasible, the alteration shall provide access to the maximum extent technically feasible.

Exceptions:

1. The altered element or space is not required to be on an accessible route, unless required by Section 3411.7.
2. Accessible means of egress required by Chapter 10 are not required to be provided in existing buildings and facilities.
3. The alteration to Type A individually owned dwelling units within a Group R-2 occupancy shall meet the provision for a Type B dwelling unit and shall comply with the applicable provisions in Chapter 11 and ICC A117.1.
4. Type B dwelling or sleeping units required by Section 1107 of this code are not required to be provided in existing buildings and facilities undergoing a change of occupancy in conjunction with alterations where the work area is 50 percent or less of the aggregate area of the building.

3411.7 (IEBC [B] 310.7) Alterations affecting an area containing a primary function. Where an alteration affects the accessibility to, or contains an area of primary function, the route to the primary function area shall be accessible. The accessible route to the primary function area shall include toilet facilities or drinking fountains serving the area of primary function.

Exceptions:

1. The costs of providing the accessible route are not required to exceed 20 percent of the costs of the alterations affecting the area of primary function.
2. This provision does not apply to alterations limited solely to windows, hardware, operating controls, electrical outlets and signs.
3. This provision does not apply to alterations limited solely to mechanical systems, electrical systems, installation or alteration of fire protection systems and abatement of hazardous materials.
4. This provision does not apply to alterations undertaken for the primary purpose of increasing the accessibility of an existing building, facility or element.
5. This provision does not apply to altered areas limited to Type B dwelling and sleeping units.

3411.8 (IEBC [B] 310.8) Scoping for alterations. The provisions of Sections 3411.8.1 through 3411.8.12 shall apply to alterations to existing buildings and facilities.

3411.8.7 (IEBC [B] 310.8.7) Accessible dwelling or sleeping units. Where Group I-1, I-2, I-3, R-1, R-2 or R-4 dwelling or sleeping units are being altered or added, the requirements of Section 1107 for Accessible units apply only to the quantity of spaces being altered or added.

3411.8.8 (IEBC [B] 310.8.8) Type A dwelling or sleeping units. Where more than 20 Group R-2 dwelling or sleeping units are being altered or added, the requirements of Section 1107 for Type A units apply only to the quantity of the spaces being altered or added.

3411.8.9 (IEBC [B] 310.8.9) Type B dwelling or sleeping units. Where four or more Group I-1, I-2, R-1, R-2, R-3 or R-4 dwelling or sleeping units are being added, the requirements Section 1107 for Type B units apply only to the quantity of the spaces being added. Where Group I-1, I-2, R-1, R-2, R-3 or R-4 dwelling or sleeping units are being altered and where the work area is greater than 50 percent of the aggregate area of the building, the requirements Section 1107 for Type B units apply only to the quantity of the spaces being altered.

3411.9 (IEBC [B] 310.9) Historic buildings. These provisions shall apply to buildings and facilities designated as historic structures that undergo alterations or a change of occupancy, unless technically infeasible. Where compliance with the requirements for accessible routes, entrances or toilet facilities would threaten or destroy the historic significance of the building or facility, as determined by the applicable governing authority, the alternative requirements of Sections 3411.9.1 through 3411.9.4 for that element shall be permitted.

Exception: Type B dwelling or sleeping units required by Section 1107 of the International *Building Code* are not required to be provided in historical buildings.

SECTION 3412 (IEBC [B] CHAPTER 13) COMPLIANCE ALTERNATIVES

3412.2.5 (IEBC [B] 1301.2.5) Accessibility requirements. All portions of the buildings proposed for *change of occupancy* shall conform to the accessibility provisions of Section 3411 (IEBC 308).

Reason: The intent of this proposal is to take a small step towards increasing the availability of housing with minimum accessibility requirements. With the fastest grouping group in the United States being people over 65 years old, there is a definite need. The last U.S. Census information indicated that 41% of people of 65 have some level of disability.

Type of units covered under the Fair Housing Act include apartments, condominiums, dormitories, fraternities, sororities, convents, monasteries, assisted living facilities, nursing homes, group homes, etc. The Fair Housing Act is applicable to building first occupied after March 1991. While the department of Housing and Urban Development has been active in enforcement of these regulations, there are a lot of existing buildings that were constructed since 1991 that did not comply with this federal law. The legacy building codes first started requiring Type B units in apartments and condominiums in 1996/1997. With code changes that added congregate living facilities and Institutional facilities, the IBC requirements for Type B units was declared a 'safe harbor' document by HUD in 2002. Reasonably, buildings in jurisdictions that have adopted 2003 or 2006 IBC meet FHA. United Spinal's concern is the buildings that were built before that.

There are a considerable number of existing buildings that should have complied with FHA and did not. When a major alteration is being performed, there is a prime opportunity to have those buildings move towards compliance. This will not only be a benefit for people that need that housing to live in, but will also help the building owners lessen or avoid complaints filed under FHA. Also, this is the most cost effective opportunity to make these revisions.

What this proposal is asking for, is that when buildings are undergoing a Level 3 alteration, or a change of occupancy that includes a Level 3 alteration, that whatever elements are altered, those elements are brought up to meet Type B requirements. If the element is not part of the alteration, it is not required to be altered. This is consistent with current building code philosophy for alterations. There are still the allowances for technically infeasible. The exceptions for non-elevator buildings, site limitations and flood zones currently indicated in Section 1107.7 are still applicable under *Extent of Application* (IBC 3409.3, IEBC 310.3, 605.1.14). Historical buildings, by their reference back to general provisions could be affected, therefore a general exception for Type B units is proposed for historical buildings.

In addition, when the area being altered is for Type B units, there is an exception for the additional route requirements currently in IBC Sections 3411.4.2 and 3411.7 and IEBC Section 310.4.2, 310.7, 605.2 and 912.8.2. United Spinal hopes that this address the concerns of site impracticality brought up during the last hearings by the Building Owners Managers Association, the National Association of Home Builders and the National Multi-Housing Council. This also reinforces the intent that this provision is not meant to require elevators when alterations are performed on upper floors in non-elevator buildings (see exceptions in Section 1107.7). These areas would have been exempted if built new under FHA and IBC, and should continue to be exempted.

The intent is that the same requirements for housing in existing buildings are included in IBC and IEBC. The wording is slightly different because IBC does not include a definition for Level 3 alterations. The terminology used – “work areas exceeds 50 percent of the aggregate area of the building” - can be found in IEBC 405.1. Some sections included in this proposal are not revised, but are included for context.

Cost Impact: The code change proposal will increase the cost of construction

ICCFILENAME: MARINELLI-EB1-605.2.DOC

Public Hearing Results

PART II-IBC GENERAL

Committee Action:

Approved as Submitted

Committee Reason: The committee approved Part II to be consistent with the action taken on Part I of the proposal.

Assembly Action:

None

Individual Consideration Agenda

These items are on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Dominic Marinelli, United Spinal Association, requests Approval as Submitted.

Commenter's Reason: See EB14-09/10, Part I

Public Comment 2:

Lawrence Brown, representing National Association of Home Builders (NAHB), requests Disapproval.

Commenter's Reason: See EB14-09/10, Part I

Final Action: AS AM AMPC_____ D

EB17-09/10

606.3.2

Proposed Change as Submitted

Proponent: David Bonowitz, SE, National Council of Structural Engineers Associations, Code Advisory Committee, Existing Buildings Subcommittee (NCSEA EBS)

Revise as follows:

606.3.2 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 wind speed is greater than 90 mph or in a special wind region, as defined in Section 1609 of the *International Building Code*, roof diaphragms and connections that are part of the main wind-force resisting system 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 ~~do not~~ **are not capable of resisting at least 75% of those wind loads**, they shall be replaced or strengthened in accordance with the loads specified in the *International Building Code*.

Reason: This proposal makes a reasonable allowance for “reduced” wind loads for certain triggered upgrades. Justifications and precedents include:

For the work triggered by Section 606.3.2, the major deficiencies – lack of basic load path elements or load path continuity – will still be caught if reduced wind loads are used.

Seismic evaluations typically use reduced loads, in part to avoid triggering upgrades to marginally overstressed elements. Wind provisions should reasonably do the same.

The seismic 75% factor is partly based on a reasonable “grandfathering” approach. Many existing buildings were designed with a (now obsolete) 1/3 overstress allowance for wind loads. Current ASCE 7 load combinations for strength design no longer make the same allowance, so even well-designed existing buildings would unreasonably be caught by a trigger that requires 100% of current loads.

FEMA (Disaster Assistance Policy 9527.4, available online) has stated a position that lateral force levels for new construction are generally considered unreasonable when applied to triggered repairs.

New designs are expected to remain elastic under 100% of current wind loads. A structure that can resist at least 75% of these loads can still reasonably be expected to perform acceptably, given the differences between minimum yield and expected ultimate strengths and due to the generally conservative nature of new design.

ASCE 7 requires a load factor of 1.6 for wind loads. Even at 75%, the effective load factor is still greater than 1.0.

Though not based on any quantified theory, observed performance, or a “grandfathering” strategy, the proposed 75% value is consistent with the factor used to reduce seismic loads.

The 75% value does not reach as low as past codes did when identifying dangerous conditions; buildings were deemed dangerous only if they could not resist 50% or 67% of design wind loads.

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

ICCFILENAME: BONOWITZ-EB27-606.3.2-2.DOC

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: This code change reduces the threshold for diaphragm and connections to 75 percent of the IBC wind load, before requiring an upgrade of these items to meet full code wind loads. There is a need to grandfather in existing buildings and this change allows the use of judgment for buildings that have been designed under previous codes.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

T. Eric Stafford, representing Institute for Business and Home Safety, requests Disapproval.

Commenter's Reason: Commenter's Reason: We are requesting Disapproval of EB17-09/10. The proponent draws correlations to the seismic 75% factor for basis for this proposed change. However, wind loads and seismic loads are based on different philosophies regarding structural design make this comparison weak. Arbitrarily applying a lower threshold for wind load retrofits just because the seismic provisions permit it is unsubstantiated and irrelevant to wind loads. The reference to the FEMA position that lateral force levels for new construction are generally unreasonable when applied to triggered repairs is misleading. This section of the IEBC applies to uplift as well as lateral loads as specifically stated in this section. The proponent argues in his reason statement that “Many existing buildings were designed with a (now obsolete) 1/3 overstress allowance for wind loads. Current ASCE 7 load combinations for strength design no longer make the same allowance...” ASCE 7 load combinations for strength design have never permitted a 1/3 overstress. The 1/3 stress increase was permitted for allowable stress design. While ASCE 7-98 and later do prohibit the use of the 1/3 stress increase when using the provisions, ASCE 7-98 and later editions also included an across-the-board 15% reduction in wind loads in the form of the directionality factor ($K_d = 0.85$ for buildings).

A general comparison reveals the flaws in the proposal. For buildings built prior to ASCE 7-98, wind loads for many buildings were essential reduced to 75% of the calculated loads by virtue of the 1/3 stress increase ($1/1.33 = .75188$). In ASCE 7-98 and later, these wind loads have essentially been reduced by 15%. By reducing the threshold for triggering retrofits an additional 25%, these elements would only be required to resist 64% of the loads the building was designed for. This effective threshold is much lower than what it appeared the proponent was hoping to obtain based on the testimony at the public hearing.

The proponent is seeking a trigger reduction on a part of buildings that are the most vulnerable to wind loads which is the roof and it's connections to the sheathing and the wall supporting the roof. If a building suffers damage for high winds, the majority of the time there is some form or roof related damage also associated with the event. This retrofit is triggered when roofing materials are removed 50% of the roof diaphragm, which is an ideal time to make needed retrofits.

The logic behind this proposal is flawed and we think it represents poor judgment. We urge your disapproval of this proposal.

Final Action: AS AM AMPC____ D

EB31-09/10

912.5.1

Proposed Change as Submitted

Proponents: Joseph A. McGrath, PE, RA, representing New York State Dep. of State, Division of Code Enforcement and Administration

Revise as follows:

912.5.1 Height and area change to higher hazard category. When a change of occupancy classification is made to a higher hazard category as shown in Table 912.5, heights and areas of buildings and structures shall comply with the requirements of Chapter 5 of the *International Building Code* for the new occupancy classification.

Exception: In other than Groups H, F-1 and S-1, in lieu of fire walls, use of fire barriers and horizontal assemblies having a fire-resistance rating of not less than that specified in Table 706.4 of the *International Building Code*, constructed in accordance with Sections 707 and 712 of the *International Building Code*, shall be permitted to meet the area limitations required for the new occupancy in buildings protected throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the *International Fire Code*. The maximum allowable area between fire barriers, horizontal assemblies or any combination thereof shall not exceed the tabular area specified in Table 503 of the *International Building Code* without any area increase allowed for an automatic sprinkler system in accordance with Section 506 of the *International Building Code*. Where horizontal assemblies are used to limit the maximum allowable area, the required fire-resistance rating of the horizontal assemblies shall be permitted to be reduced by 1-hour provided the height and number of stories increases allowed by Section 504.2 for an automatic sprinkler system are not used for the building.

Reason: This proposal is a follow-up to code change EB33-06/07 that was approved as modified by Public Comment #1 submitted by the Alliance for Fire and Smoke Containment and Control (AFSCC) at the ICC Final Action Hearings in Rochester, New York in May, 2007. The reason for the original EB33 proposal is the need to reuse existing mill buildings that are sprinklered and the fact that the original code requirement for fire walls is not financially or physically practicable. This proposal will provide an additional measure of safety to the current requirements of this section.

At the 2007 hearings the AFSCC proposed that if fire barriers were used in lieu of fire walls, a significant reduction in allowable building and fire areas should occur. We agree, so this proposal reduces the allowable building area by allowing fire fighting access (open space) credits but not sprinklering credits. An example, to use the most probable application of this proposal, would be a Type IIIB construction mill building being converted from an F-1 (moderate hazard) occupancy to an R-2 (residential) occupancy. This change in occupancy would be considered a change to a higher hazard.

Under the proposed change, the mill building described above would be allowed to have a floor area of 28,000 square feet and a total maximum floor area for all stories of 84,000 square feet between fire barriers with a maximum 75% increase allowed for open space. Present requirements for a new building would allow 60,000 square feet for a single floor area and 180,000 square feet of total floor area with the additional increase allowed for an automatic sprinkler system.

The logic behind not allowing area increases for sprinklering is because under the circumstances of the substitution of fire barriers for fire walls in these buildings, the required sprinklers should not be given extra credit.

The concept of allowing horizontal assemblies to be used to subdivide the building presumes that the fire would be contained within the six sided box formed by the fire barrier walls and horizontal assemblies and/or exterior walls and roof which is limited to the area prescribed in this proposed code change. Thus, the volume of the building separated from the rest of the building by the required fire-resistance rated construction would be comparable.

The logic behind allowing a 1-hour reduction in the required fire-resistance rating for the horizontal assemblies is based on the fact that the automatic sprinkler system provided would not be used for a height increase both in number of stories and in total feet (1 story and 20 feet), yet the building will still be compartmented with fire-resistive horizontal assemblies having, in most cases, a minimum fire-resistance rating of 2-hours and, in some cases, as low as 1-hour but only 1 hour less than what would otherwise be required by Table 705.4 by this exception for the fire barriers. Thus, the sprinkler credit that would otherwise be given for the increase in height currently allowed by Chapter 5 of the International Building Code would be used for the reduction of 1-hour in the required fire-resistance rating of the horizontal assembly. We believe this provides a reasonable equivalent level of fire and life safety protection for existing buildings being converted under this exception as modified by this code change proposal.

Cost Impact: The code change proposal will result in added costs to construction if the building is over a specific size as to require more fire barriers than the present requirements. However, the cost and practicality of converting existing buildings is still greatly improved from the requirements in the 2003 IEBC.

ICCFILENAME: MCGRATH-EB1-912.5.1.DOC

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: There was an agreement that horizontal assemblies should be acknowledged as a valid alternative for decreasing building area but it was felt that an increase for sprinklers should be allowed.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Jason Thompson, National Concrete Masonry Alliance (NCMA), representing Masonry Alliance for Codes and Standards (MACS), requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

912.5.1 Height and area change to higher hazard category. When a change of occupancy classification is made to a higher category as shown in Table 912.5, heights and areas of buildings and structures shall comply with the requirements of Chapter 5 of the International Building Code for the new occupancy classification.

~~**Exception:** In other than Groups H, F-1 and S-1, in lieu of fire walls, use of fire barriers and horizontal assemblies having a fire-resistance rating of not less than that specified in Table 705.4 of the International Building Code, constructed in accordance with Section 706 and 711 of the International Building Code, shall be permitted to meet the area limitations required for the new occupancy in buildings protected throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the International Fire Code. The maximum allowable area between fire barriers, horizontal assemblies or any combination thereof shall not exceed the tabular area specified in Table 503 of the International Building Code without any area increase allowed for an automatic sprinkler system in accordance with Section 506 of the International Building Code. Where horizontal assemblies are used to limit the maximum allowable area, the required fire-resistance rating of the horizontal assemblies shall be permitted to be reduced by 1-hour provided the height and number of stories increases allowed by Section 504.2 for an automatic sprinkler system are not used for the building.~~

912.5.1.1 Fire wall alternative. In other than Group F-1, H and S-1, fire barriers and horizontal assemblies constructed in accordance with Sections 707 and 712, respectively, of the *International Building Code* shall be permitted to be used in lieu of fire walls to subdivide the building into separate buildings for the purpose of complying with the area limitations required for the new occupancy where all of the following conditions are met:

1. The buildings are protected throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the *International Fire Code*.
2. The maximum allowable area between fire barriers, horizontal assemblies, or any combination thereof shall not exceed the maximum allowable area determined in accordance with Chapter 5 of the International Building Code without an increase allowed for an automatic sprinkler system in accordance with Section 506 of the *International Building Code*.
3. The fire-resistance rating of the fire barriers and horizontal assemblies shall not be less than that specified for fire walls in Table 706.4 of the *International Building Code*.

~~**Exception:** Where horizontal assemblies are used to limit the maximum allowable area, the required fire-resistance rating of the horizontal assemblies shall be permitted to be reduced by 1-hour provided the height and number of stories increases allowed for an automatic sprinkler system by Section 504.2 of the *International Building Code* are not used for the buildings.~~

Commenter's Reason: We are submitting this Public Comment to revise the original Code Change Proposal in an effort to respond to the International Existing Building Code Development Committee's concerns expressed during the ICC Code Development Committee Hearings held in Baltimore, MD last year, as well as those testifying in opposition to this Code Change. We have discussed the revisions proposed in this Public Comment with the proponents of Code Change EB31-09/10 and they have indicated their approval.

It should be noted that the Committee agreed with the Code Change including horizontal assemblies as being allowed to substitute for fire walls in subdividing a building to determine its allowable height and area. However, the Committee felt that an increase for automatic sprinklers should be allowed. We would point out that the Code Change already allows for the automatic sprinkler system to be used to reduce the requirement for fire walls to separate the existing building to meet the allowable height and areas by allowing the use of fire barriers and horizontal assemblies. This is a significant sprinkler trade-off since fire walls create separate buildings, whereas fire barriers and horizontal assemblies compartmentize a building.

This Code Change also allows the sprinkler system to be used to either increase the building height and number of stories or to reduce the required fire-resistance ratings for the horizontal assemblies by 1-hour. The only thing that isn't allowed for the automatic sprinkler system is an area increase which we believe results in too much reliance on the automatic sprinkler system for this application. However, this Code Change still allows the open space perimeter increase calculations to be used to increase the base tabular areas in Table 503.

We believe that the judicious use of automatic sprinkler systems allowed by this Code Change recognizes the value that automatic sprinkler systems bring to the overall level of fire and life safety provided in the existing building, while also recognizing that certain minimum requirements for compartmentation should be maintained when changing the occupancy of existing buildings. To us, this is a "win-win" situation that will provide a great deal of flexibility in rehabilitating the existing building stock without violating the intent of the building code for providing a reasonable level of fire and life safety to the building and its occupants.

We have also reformatted this Code Change by deleting the very lengthy Exception. Instead, we have provided a new Subsection 912.5.1.1 Fire Wall Alternative. This section is formatted in a way to make it much more straightforward and easy to understand and apply the provisions that will allow the substitution of fire barriers and horizontal assemblies for fire walls to subdivide existing buildings for the purpose of determining the allowable height and area based upon the new occupancy classification caused by the change in occupancy(s) of the existing building.

For these reasons we respectfully request the Class A voting members overturn the International Existing Building Code Development Committee's recommendation for disapproval and approve this Public Comment for approval as revised of Code Change EB31-09/10.

Final Action: AS AM AMPC _____ D

EB32-09/10, Part I

IEBC 912.8, 912.8.1, 912.8.2; IBC 3411.4, 3411.4.1, 3411.4.2 (IEBC [B] 310.4, 310.4.1, 310.4.2)

Proposed Change as Submitted

Proponent: Maureen Traxler, City of Seattle, WA, Seattle Dept of Planning & Development

PART I – IEBC

Revise as follows:

912.8 Accessibility. Existing buildings that undergo a change of group or occupancy shall comply with this section.

912.8.1 Partial change in occupancy. Where a all or any portion of the a building is changed to a new occupancy classification, any alterations shall comply with Sections 605 and 706, as applicable.

912.8.2 Complete change of occupancy. Where an entire building undergoes a change of occupancy, it shall comply with Section 3411.4.1 and shall have all of the following accessible features:

1. At least one accessible building entrance.
2. At least one accessible route from an accessible building entrance to primary function areas.
3. Signage complying with Section 1110.
4. Accessible parking, where parking is being provided.
5. At least one accessible passenger loading zone, when loading zones are provided.
6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.

Where it is technically infeasible to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.

Reason: When buildings are altered, required improvements in accessibility are limited to 20% of the cost of the alterations according to exception 1 to IBC Section 3411.7 and exception 1 to IEBC Section 605.2. According to the Access Board website [<http://www.access-board.gov/ada%2Daba/adaag.cfm#a202>], "Department of Justice ADA regulations state, 'Alterations made to provide an accessible path of travel to the altered area will be deemed disproportionate to the overall alteration when the cost exceeds 20% of the cost of the alteration to the primary function area.' (28 CFR 36.403 (f)(1)). See also Department of Transportation ADA regulations, which use similar concepts in the context of public sector transportation facilities (49 CFR 37.43 (e)(1))."

Changes of occupancy shouldn't be required to do more than alterations. Many changes of occupancy are accomplished with little or no construction work—a space may be refurnished and transformed from a Group M retail store to a Group B office. Any construction work that is done would be required to comply with IBC Section 3411.7 (IEBC Section 605.2), and would be subject to the 20% limitation.

The list of priority accessible features has been deleted because it is not necessary for correlation with the ADAAG, and because such a prescriptive requirement does not allow the flexibility to spend money improving the accessible route where it makes the most sense. It is our understanding that while the list was originally proposed for adoption in the new ADAAG, ultimately, it was decided to allow that flexibility, and the list does not appear in the updated ADAAG.

We think the proposal presented above is the most comprehensive and cleanest way to address our issues. However, if the Committee decides that keeping the priority list is a necessity, we would be open to a modification of the proposal that would retain all the existing language that is shown as being struck through in IBC Sections 3411.4, 3411.4.1, and 3411.4.2, but instead, just inserts an exception just after the list in Section 3411.4.2 as follows:

3411.4.2 Complete change of occupancy. Where an entire building undergoes a change of occupancy, it shall comply with Section 3411.4.1 and shall have all of the following *accessible* features:

1. At least one *accessible* building entrance.
2. At least one *accessible* route from an *accessible* building entrance to *primary function* areas.
3. Signage complying with Section 1110.
4. Accessible parking, where parking is being provided.
5. At least one *accessible* passenger loading zone, when loading zones are provided.
6. At least one *accessible* route connecting *accessible* parking and *accessible* passenger loading zones to an *accessible* entrance.

Exception: The costs of providing an *accessible* route or *accessible* features are not required to exceed 20 percent of the costs of the alterations affecting the area of *primary function*.

Where it is *technically infeasible* to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.

The corresponding changes would have to be made to IEBC Section 912.8 if this alternative is chosen (i.e., retain struck-through text in 912.8, 912.8.1, and 912.8.2, and add the new exception to 912.8.2). This would still address the issue capping the required costs of accessibility upgrades, without affecting the priority list.

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

ICCFILENAME: TRAXLER-G11-3411.4.2

Public Hearing Results

PART I- IEBC

Committee Action:

Disapproved

Committee Reason: The proposal which would have only required accessible features when an alteration was required was disapproved as it was felt that a modification addressing an upper limit on cost at 20% instead of fully exempting changes of occupancy without alterations was more appropriate.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Maureen Traxler, representing the City of Seattle Department of Planning & Development, requests Approval as Modified by this Public Comment.

Replace the proposal as follows:

Part I—IEBC

912.8 Accessibility. Existing buildings that undergo a change of group or occupancy shall comply with this section.

912.8.1 Partial change in occupancy. Where a portion of a building is changed to a new occupancy classification, any alterations shall comply with Sections 605 and 706, as applicable.

912.8.2 Complete change of occupancy. Where an entire building undergoes a change of occupancy, it shall comply with Section 912.8.1 and shall have all of the following accessible features:

1. At least one accessible building entrance.
2. At least one accessible route from an accessible building entrance to primary function areas.
3. Signage complying with Section 1110 of the International Building Code.
4. Accessible parking, where parking is provided.
5. At least one accessible passenger loading zone, when loading zones are provided.
6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.

Exception: The costs of providing an accessible route as required in items 1 through 6 are not required to exceed 20 percent of the costs of the alterations affecting the area of primary function.

Where it is technically infeasible to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.

Commenter's Reason: This purpose of the original proposal and this comment is to apply the same accessibility requirements to changes of occupancy as apply to alterations. Existing code provisions for alterations limit the cost of accessibility improvements to 20% of the cost of the alterations. No such limit applies to changes of occupancy. This public comment retains the existing language in both the IBC and IEBC and adds an exception that applies the "20% rule" to changes of occupancy. The Code Development Committee expressed a preference for a modification similar to this, but while this text was included in our original reason statement, when we attempted to introduce it as a floor modification, it was ruled out of order as being too hard for the committee to easily understand in the short time available. The only changes to existing language proposed by this comment is to add the exception after Item 6 in both codes.

Final Action: AS AM AMPC____ D

EB32-09/10, Part II

IEBC 912.8, 912.8.1, 912.8.2; IBC 3411.4, 3411.4.1, 3411.4.2 (IEBC [B] 310.4, 310.4.1, 310.4.2)

Proposed Change as Submitted

Proponent: Maureen Traxler, City of Seattle, WA, Seattle Dept of Planning & Development

PART II – IBC GENERAL

Revise as follows:

3411.4 (IEBC [B] 310.4) Change of occupancy. Existing buildings that undergo a change of group or occupancy shall comply with this section.

3411.4.1 (IEBC [B] 310.4.1) Partial change in occupancy. Where a all or any portion of the a building is changed to a new occupancy classification, any alterations shall comply with Sections 3411.6, 3411.7 and 3411.8.

3411.4.2 (IEBC [B] 310.4.2) Complete change of occupancy. Where an entire building undergoes a change of occupancy, it shall comply with Section 3411.4.1 and shall have all of the following accessible features:

1. ~~At least one accessible building entrance.~~
2. ~~At least one accessible route from an accessible building entrance to primary function areas.~~
3. ~~Signage complying with Section 1110.~~
4. ~~Accessible parking, where parking is being provided.~~
5. ~~At least one accessible passenger loading zone, when loading zones are provided.~~
6. ~~At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.~~

~~Where it is technically infeasible to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.~~

Reason: When buildings are altered, required improvements in accessibility are limited to 20% of the cost of the alterations according to exception 1 to IBC Section 3411.7 and exception 1 to IEBC Section 605.2. According to the Access Board website [<http://www.access-board.gov/ada%2Daba/adaag.cfm#a202>], "Department of Justice ADA regulations state, 'Alterations made to provide an accessible path of travel to the altered area will be deemed disproportionate to the overall alteration when the cost exceeds 20% of the cost of the alteration to the primary function area.' (28 CFR 36.403 (f)(1)). See also Department of Transportation ADA regulations, which use similar concepts in the context of public sector transportation facilities (49 CFR 37.43 (e)(1))."

Changes of occupancy shouldn't be required to do more than alterations. Many changes of occupancy are accomplished with little or no construction work—a space may be refurbished and transformed from a Group M retail store to a Group B office. Any construction work that is done would be required to comply with IBC Section 3411.7 (IEBC Section 605.2), and would be subject to the 20% limitation.

The list of priority accessible features has been deleted because it is not necessary for correlation with the ADAAG, and because such a prescriptive requirement does not allow the flexibility to spend money improving the accessible route where it makes the most sense. It is our understanding that while the list was originally proposed for adoption in the new ADAAG, ultimately, it was decided to allow that flexibility, and the list does not appear in the updated ADAAG.

We think the proposal presented above is the most comprehensive and cleanest way to address our issues. However, if the Committee decides that keeping the priority list is a necessity, we would be open to a modification of the proposal that would retain all the existing language that is shown as being struck through in IBC Sections 3411.4, 3411.4.1, and 3411.4.2, but instead, just inserts an exception just after the list in Section 3411.4.2 as follows:

3411.4.2 Complete change of occupancy. Where an entire building undergoes a change of occupancy, it shall comply with Section 3411.4.1 and shall have all of the following *accessible* features:

1. At least one *accessible* building entrance.
2. At least one *accessible* route from an *accessible* building entrance to *primary function* areas.
3. Signage complying with Section 1110.
4. Accessible parking, where parking is being provided.
5. At least one *accessible* passenger loading zone, when loading zones are provided.
6. At least one *accessible* route connecting *accessible* parking and *accessible* passenger loading zones to an *accessible* entrance.

Exception: The costs of providing an *accessible* route or *accessible* features are not required to exceed 20 percent of the costs of the *alterations* affecting the *area of primary function*.

Where it is *technically infeasible* to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.

The corresponding changes would have to be made to IEBC Section 912.8 if this alternative is chosen (i.e., retain struck-through text in 912.8, 912.8.1, and 912.8.2, and add the new exception to 912.8.2). This would still address the issue capping the required costs of accessibility upgrades, without affecting the priority list.

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

ICCFILENAME: TRAXLER-G11-3411.4.2

Public Hearing Results

**PART II-IBC GENERAL
Committee Action:**

Disapproved

Committee Reason: The code change was disapproved to be consistent with the action on Part I of the proposal.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Maureen Traxler, representing City of Seattle Dept. of Planning & Development, requests Approval as Modified by this Public Comment.

Replace the proposal as follows:

3411.4 (IEBC [B] 310.4) Change of occupancy. Existing buildings that undergo a change of group or occupancy shall comply with this section.

3411.4.1 (IEBC [B] 310.4.1) Partial change in occupancy. Where a portion of a building is changed to a new occupancy classification, any alterations shall comply with Sections 3411.6, 3411.7 and 3411.8.

3411.4.2 Complete change of occupancy. Where an entire building undergoes a change of occupancy, it shall comply with Section 3411.4.1 and shall have all of the following *accessible* features:

1. At least one *accessible* building entrance.
2. At least one *accessible* route from an *accessible* building entrance to *primary function* areas.
3. Signage complying with Section 1110.
4. Accessible parking, where parking is being provided.
5. At least one *accessible* passenger loading zone, when loading zones are provided.
6. At least one *accessible* route connecting *accessible* parking and *accessible* passenger loading zones to an *accessible* entrance.

Exception: The costs of providing an *accessible* route as required in items 1 through 6 are not required to exceed 20 percent of the costs of the *alterations* affecting the area of *primary function*.

Where it is *technically infeasible* to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.

Commenter's Reason: See EB32-09/10, Part I

Final Action: AS AM AMPC___ D

EB34-09/10 912.8.2

Proposed Change as Submitted

Proponent: Lawrence Brown, CBO, National Association of Home Builders (NAHB)

Revise as follows:

912.8.2 Complete change of occupancy. Where an entire building undergoes a *change of occupancy*, it shall comply with Section 912.8.1 and shall have all of the following *accessible* features:

1. At least one accessible building entrance.
2. At least one accessible route from an accessible building entrance to *primary function* areas.
3. Signage complying with Section 1110 of the *International Building Code*.
4. Accessible parking, where parking is provided.
5. At least one accessible passenger loading zone, where loading zones are provided.
6. At least one accessible route connecting accessible parking and accessible passenger loading zones to an accessible entrance.

Where it is *technically infeasible* to comply with the new construction standards for any of these requirements for a change of group or occupancy, the above items shall conform to the requirements to the maximum extent technically feasible.

Exception: Type B dwelling or sleeping units required by Section 1107 of the *International Building Code* are not required to be provided in existing buildings and facilities.

Reason: The purpose of this Proposal is to reinstate this Exception that was deleted during the 2007-08 Code Development Cycle. The deletion of the Exception is contrary to the U.S. Federal Law Fair Housing Act accessibility requirements. The Federal Fair Housing Act does not require existing buildings that are converted to residential use to comply with the Fair Housing Act accessibility requirements. The IBC does not require existing buildings with a change of occupancy to residential use to contain Type B units. In fact, with the deletion of this Exception caused an inconsistency between the IBC and the IEBC. Section 3411.1 of the IBC states:

3409.1 Scope. The provisions of Sections 3411.1 through 3411.9 apply to maintenance, change of occupancy, additions and alterations to existing buildings, including those identified as historic buildings.

Exception: Type B dwelling or sleeping units required by Section 1107 are not required to be provided in existing buildings and facilities.

Federal Law for the implementing the accessibility requirements of the Fair Housing Act only apply to new buildings as described in the HUD Fair Housing Act Design Manual as follows: *"The Fair Housing Act does not require any renovations to existing buildings. Its design requirements apply to new construction only – to covered multifamily dwellings that are built for first occupancy after March 13, 1991. First occupancy is defined as "a building that has never before been used for any purpose."*

As the Federal law states, any existing building that is converted to residential use, no matter when it was constructed, is NOT required to comply with the Fair Housing Act. It also needs to be understood that the I-Codes contain provisions. The I-Codes should not contain requirements that are contrary to Federal public law.

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

ICCFILENAME: BROWN-EB1-912.8.2.DOC

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: The proposal was disapproved to be consistent with the action taken on EB14. There was also some concern that where the exception is proposed is awkward as it has no relationship to the list related to the accessible path features. Some members of the committee were concerned that without this proposed exception the FHA would be exceeded.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Lawrence Brown, CBO, representing the National Association of Home Builders (NAHB), requests Approval as Submitted.

Commenter's Reason: The purpose of this Proposal is to reinstate this Exception that allowed the IBC to be in compliance with Federal Law. The Exception was deleted during the 2007-08 Code Development Cycle. By deleting the Exception the IBC exceeded the Federal Fair Housing (FHAct) Requirements for accessibility. Most importantly, that change had the effect of putting the IBC in conflict with the Federal Law - a law that only requires multifamily "buildings" constructed for first occupancy after March 13, 1991 to be constructed to the FHAct requirements. This change applies to ALL existing buildings converted to multifamily use, no matter when they were first constructed. The FHAct does not require any existing building that is converted to residential use to comply with the Fair Housing Act accessibility requirements.

The Federal Law for implementing the accessibility requirements of the Fair Housing Act only applies to new buildings as described in the HUD Fair Housing Act Design Manual as follows: *"The Fair Housing Act does not require any renovations to existing buildings. Its design requirements apply to new construction only – to covered multifamily dwellings that are built for first occupancy after March 13, 1991. First occupancy is defined as "a building that has never before been used for any purpose."*

As the Federal Law states, any existing building that is converted to residential use, no matter when it was constructed, is NOT required to

comply with the Fair Housing Act. The I-Codes should be used for the purpose of providing construction requirements to address life-safety concerns, not as a vehicle to orchestrate social change. Another problem is that this change causes the IBC requirements to circumvent and nullify the FHAct and the rulings handed down by the Federal Courts, and the aspect of Federal preemption. From an enforcement standpoint, as Federal Law will preempt any state or local law, there will be challenges to the adoption of this Code. There is no benefit for any state or local jurisdiction to have to fight a challenge in court if the adoption of the I-Codes does not contain this Exception. It appears the deletion of the Exception was an attempt by a department of the Federal Government to mandate social change without going through the Federal Administrative Procedure Act rulemaking process. If it is intended that HUD will be adding this type of provision to the requirements of the FHAct, then this type of requirement should not be included in the I-Codes until such time as they are enacted into Federal Law.

Final Action: AS AM AMPC_____ D

EB36-09/10

1101.2

Proposed Change as Submitted

Proponent: David Bonowitz, SE, National Council of Structural Engineers Associations, Code Advisory Committee, Existing Buildings Subcommittee (NCSEA EBS)

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:

1101.2 Report. A historic building undergoing repair, alteration, or change of occupancy shall be investigated and evaluated. If it is intended that the building meet the requirements of this chapter, a written report shall be prepared and filed with the code official by a registered design professional when such a report is necessary in the opinion of the code official. Such report shall be in accordance with Chapter 1 and shall identify each required safety feature that is in compliance with this chapter and where compliance with other chapters of these provisions would be damaging to the contributing historic features. For buildings assigned to Seismic Design Category D, E, or F, a structural evaluation describing, at a minimum, the vertical and horizontal elements of the lateral force resisting system and any strengths or weaknesses therein ~~a complete load path and other earthquake-resistant features~~ shall be prepared. Additionally, the report shall describe each feature that is not in compliance with these provisions and shall demonstrate how the intent of these provisions is complied with in providing an equivalent level of safety.

Reason: This is an editorial proposal. The current provision requires the engineer to describe a complete load path whether one is present or not. Further, the term "earthquake resistant features" is vague. This proposal clarifies that the provision's intent is to require some description of the designed or *de facto* lateral system and to identify its salient features. The proposed language should be clearer, more enforceable, and more effective at producing a useful report.

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

ICCFILENAME: BONOWITZ-EB22-1101.2.DOC

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: This code change was approved as it provides a more precise definition of the lateral force-resisting system description that is required for the written report on a historic building.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Maureen Traxler, representing the City of Seattle Department of Planning & Development, requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

1101.2 Report. A historic building undergoing repair, alteration, or change of occupancy shall be investigated and evaluated. If it is intended that the building meet the requirements of this chapter, a written report shall be prepared and filed with the code official by a registered design professional when such a report is necessary in the opinion of the code official. Such report shall be in accordance with Chapter 1 and shall identify each required safety feature that is in compliance with this chapter and where compliance with other chapters of these provisions would be damaging to the contributing historic features. For buildings assigned to Seismic Design Category D, E, or F, a structural evaluation describing, at a minimum, the vertical and horizontal elements of the lateral force resisting system and any strengths or weaknesses therein shall be prepared. Additionally, the report shall describe each feature that is not in compliance with these provisions and shall demonstrate how the intent of these provisions is complied with in providing an equivalent level of safety.

Commenter's Reason: This proposed modification is consistent with the proponent's intention to require the engineer to describe the lateral force resisting system. By limiting the requirement to vertical and horizontal elements, important diagonal bracing or other elements may be missed.

Final Action: AS AM AMPC____ D

EB39-09/10

1202.8 (New)

Proposed Change as Submitted

Proponent: Randall R. Dahmen, WI Registered PE, WI Licensed Commercial Building Inspector

Add new text as follows:

1202.8 Building envelope. A relocated or moved building shall comply with the *International Energy Conservation Code* for building envelope requirements when the building is relocated or moved to a different climate zone.

Reason: In order to create efficient building energy performance, this code change requires those buildings that change regions of climate where there are more restrictive building envelope requirements, to meet the more restrictive performance criteria of the IECC for the new location. Buildings are many times relocated or moved from regions of the country which are typically warm, and which require minimal insulation at the time of original construction, to regions that are extremely cold, whose minimum requirements for building insulation are significantly greater. Similarly, buildings that are relocated or moved from a cold climate to a warm climate may find that they may need to make changes to the existing glazing in order to comply with the Solar Heat Gain Coefficient (SHGC) requirements.

At present, there are no rules requiring that the relocated building install additional insulation to the building envelope assemblies. This seems inappropriate, since the original design was intended for the original building location, not the proposed relocation. It is the opinion of this author that this proposal is an extension of the snow load requirements already addressed under IEBC 1202.5. Clearly, it has been established that when a building changes locations, it needs to be modified so as to appropriately accommodate the climatic conditions of the new site. This is a continuation of that thought process.

Cost Impact: Minimal. Exact costs would be dependent on the significance in the change in climate for the moved or relocated building.

ICCFILENAME: DAHMEN-EB2-1202.8.DOC

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: The proposal was disapproved as it has no exception for historic buildings that are moved or relocated into a different climate zone.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Randall R. Dahmen, WI Registered PE, WI Licensed Commercial Building Inspector, requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

1207.8 Building envelope. A relocated or moved building shall comply with the *International Energy Conservation Code* for building envelope requirements when the building envelope requirements at the new location are more restrictive than those at the previous location.

Exception: Historic buildings complying with Chapter 11.

Commenter's Reason: The exception is requested to be added so as to address those buildings of historical significance. As originally worded, historical buildings which would be relocated or moved could be required to be altered in order to be insulated to current IECC requirements. The requirement to add insulation to historical buildings may cause modifications not indicative of the original building construction. Such action would take away a portion of the historical perspective of the building.

Note that the wording of the exception could be altered so as to be more consistent with other code provisions, as long as the intent of the exception is still met.

Final Action: AS AM AMPC____ D

EB55-09/10

A401.2

Proposed Change as Submitted

Proponent: Gary R. Searer, Wiss, Janney, Elstner Associates, Inc., representing National Council of Structural Engineers Association (NCSEA) Existing Buildings Subcommittee

Revise as follows:

A401.2 Scope. The provisions of this chapter shall apply to all existing Occupancy Group R-1 and R-2 buildings of wood construction or portions thereof where the structure has a soft, weak, or open-front wall line, and there exists one or more stories above. :

- ~~1. The ground floor portion of the wood frame structure contains parking or other similar open floor space, which causes soft, weak or open-front wall lines as defined in this chapter, and there exists one or more stories above, or~~
- ~~2. The walls of any story or basement of wood construction are laterally braced with nonconforming structural materials as defined in this chapter, a soft or weak wall line exists as defined in this chapter and there exist two or more stories above.~~
- ~~3. The structure is assigned to Seismic Design Category C, D or E.~~

Reason: This proposal clarifies the scope by removing inapplicable and unnecessary language. Of the three conditions in the current provision, only Condition 1 is appropriate for a clear and limited scope. The proposed wording of Condition 1 removes the reference to parking and open floor space, as well as the requirement that the open floor space be on the ground floor. While these are common conditions, they are not the only ones to which this chapter is meant to apply. The descriptors proposed for removal are better suited for commentary.

Current Condition 2 recognizes the possibility of a weak or soft story condition without an open front wall line, but with the revision to Condition 1, it is no longer necessary, as soft and weak conditions are already covered.

Current Condition 3 indicates the original intent of this chapter to apply to voluntary retrofits in areas of relatively high seismicity. While the provisions were not written originally for SWOF buildings in areas of lower seismicity, they may be used for those buildings. Further, the limitation to SDC C-E no longer applies now that this chapter is referenced from the body of the IEBC as an option for buildings in any seismic design category.

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

ICCFILENAME: SEARER-EB8-A401.2.DOC

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: This proposal was approved as it cleans up the scope of Appendix A4 by removing extraneous language.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Gary J. Ehrlich, PE, representing National Association of Home Builders (NAHB), requests Approval as Modified by this Public Comment.

Modify the proposal as follows:

A401.2 Scope. The provisions of this chapter shall apply to all existing Occupancy Group R-1 and R-2 buildings in Seismic Design Category C, D or E of wood construction or portions thereof where the structure has a soft, weak, or open-front wall line, and there exists one or more stories above.

Commenter's Reason: The purpose of this public comment is to restore the scope of Appendix A4 to moderate- and high-seismic regions. Light-frame wood structures in Seismic Design Category A and B are typically governed by wind loads, not seismic loads. Soft or weak-story, and open-front wall behaviors are unique to seismic events. Where failures of light-frame structures in wind events have occurred, it is due either to a lack of sufficient code-compliant shear walls to resist the basic wind forces, or due to failure of an opening (such as a garage door or plate glass window) that results in an internal pressurization failure.

We note the ASCE 7 seismic provisions for horizontal and vertical irregularities only limit soft-story and weak-story conditions in Seismic Design Categories D through F. The provisions do limit extreme weak-story conditions in Seismic Design Category B and C. However, the limitation is waived if the seismic forces are increased for the purposes of the design. But, as noted above, in Seismic Design Category B wind forces will govern the design. Therefore, there is no need to specially address a condition for a building in low-seismic regions that would never cause a failure of that building.

To avoid any possibility the provisions of this Appendix could be required for a light-frame structure in Seismic Design Category B, the original scope limiting the use of these provisions in Seismic Design Categories C, D, and E should be restored.

Final Action: AS AM AMPC____ D

EB56-09/10

A402

Proposed Change as Submitted

Proponent: David Bonowitz, SE, National Council of Structural Engineers Associations, Code Advisory Committee, Existing Buildings Subcommittee (NCSEA EBS)

Revise definition as follows:

A402 DEFINITIONS

EXPANSION ANCHOR. ~~An approved mechanical fastener placed in hardened concrete that is designed to expand in a self-drilled or pre-drilled hole of a specified size and engage the sides of the hole in one or more locations to develop shear and/or tension resistance to applied loads without grout, adhesive, or drypack.~~ 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.

Reason: This proposal is editorial. The proposed definition is consistent with that now used in ACI 318 Appendix D and other ICC-ES resources.

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

ICCFILENAME: BONOWITZ-EB12- A402-EXPANSION ANCHOR.DOC

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: This proposal was approved as it revises the definition of "Expansion anchor" in Appendix A4 to be consistent with ACI 318, Appendix D. This is also consistent with the committee's action on EB 50-09/10.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

David Bonowitz, SE, representing the National Council of Structural Engineers Associations, Code Advisory Committee, Existing Buildings Subcommittee (NCSEA EBS) requests Disapproval.

Commenter's Reason: NCSEA EBS recommends disapproval of this well-intentioned proposal for the following reasons: We are the proponent of EB56. As discussed at the hearings in Baltimore, EB65 is the preferred proposal. Both EB56 and EB65 were approved as submitted. To avoid confusion, EB56 should now be disapproved so that EB65 can be implemented.

Final Action: AS AM AMPC_____ D

EB72-09/10

Appendix C (New)

Proposed Change as Submitted

Proponent: T. Eric Stafford, PE, Institute for Business and Home Safety

Add a new appendix as follows:

APPENDIX C **GUIDELINES FOR WIND RETROFIT OF EXISTING BUILDINGS**

The provisions contained in this appendix are not mandatory unless specifically referenced in the adopting ordinance.

CHAPTER C1 **GABLE END RETROFIT FOR HIGH WIND AREAS**

SECTION C101 **GENERAL**

C101.1 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 the building's resistance to wind loads.

C101.2 Scope. The following prescriptive methods are intended for applications where the gable end wall framing is provided by a wood gable end wall truss or a conventionally framed rafter system. The retrofits are appropriate for wall studs oriented with the wide face parallel to or perpendicular to the gable end surface. Gable ends to be strengthened shall be permitted to be retrofitted using methods prescribed by this chapter.

SECTION C102 **DEFINITIONS**

ANCHOR BLOCK. A piece of lumber secured to horizontal braces and filling the gap between existing framing members for the purpose of restraining horizontal braces from movement perpendicular to the framing members.

COMPRESSION BLOCK. A piece of lumber used to restrain in the compression mode (force directed towards the interior of the attic) an existing or retrofit stud. It is attached to a horizontal brace and bears directly against the existing or retrofit stud.

CONVENTIONALLY FRAMED GABLE END. A gable end framed with studs whose faces are perpendicular to the gable end wall.

HORIZONTAL BRACE. A piece of lumber used to restrain both compression and tension loads applied by a retrofit stud. It is typically installed horizontally on the top of attic floor framing members (truss bottom chords or ceiling joists) or on the bottom of pitched roof framing members (truss top chord or rafters).

HURRICANE TIES. Manufactured metal connectors designed to provide uplift and lateral restraint for roof framing members.

NAIL PLATE. A manufactured metal plate made of galvanized steel with factory punched holes for fasteners. A nail plate may have the geometry of a strap.

RETROFIT. The voluntary process of strengthening or improving buildings or structures, or individual components of buildings or structures for the purpose of making existing conditions better serve the purpose for which they were originally intended or the purpose that current building codes intend.

RETROFIT STUD. A lumber member used to structurally supplement an existing gable end wall stud.

RIGHT ANGLE BRACKET. A galvanized metal right angle bracket listed by the manufacturer for the material into which they will be attached, masonry (concrete or CMU) or wood.

STUD-TO-PLATE CONNECTOR. A manufactured metal connector designed to connect studs to plates.

TRUSS GABLE END. An engineered factory made truss or site built truss that incorporates factory installed or field installed vertical studs with their faces parallel to the plane of the truss

SECTION C103 **MATERIALS OF CONSTRUCTION**

C103.1 Existing materials. All existing wood materials that will be part of the retrofit work (trusses, rafters, ceiling joists, top plates, wall studs, etc.) shall be in sound condition and free from defects or damage that substantially reduces the load-carrying capacity of the member. Any wood materials found to be damaged or deteriorated shall be strengthened or replaced with new materials to provide a net dimension of sound wood equivalent to its undamaged original dimensions.

C103.2 New materials. All new materials shall comply with the requirements of the *International Building Code* or the *International Residential Code* as applicable.

C103.3. Material specifications for retrofits. Materials for retrofitting gable end walls shall comply with Sections C103.3.1 through C103.6

C103.3.1 Anchor blocks, compression blocks, and horizontal braces. Anchor blocks, compression blocks, and horizontal braces shall be lumber nominally 2 inch by at least 4 inch wide.

C103.3.2 Nail plate. Nail plates shall be of minimum 20 gauge thickness.

C103.3.3 Retrofit stud. Retrofit studs shall be made of nominal 2-inch lumber.

C103.3.4 Right angle bracket. Right angle brackets shall have a minimum capacity of 350 for uplift and lateral load conditions.

C103.3.5 Stud-to-plate connector. Stud-to-plate connectors shall have a minimum capacity of 500 pounds for uplift.

C103.3.6 Truss gable end. Gable end trusses shall be spaced no greater than 24-iches on center.

C103.4 Metal plate connectors, straps and anchors. Metal plate connectors, plates, straps and anchors shall be a product approved for connecting wood-to-wood or wood-to-concrete as appropriate. Straps and nail plates shall be

manufactured from galvanized steel with a minimum thickness of 20 gauge. Nail plates shall have holes sized for a minimum of 8d nails.

C103.5 Twists in straps. Straps shall be permitted to be twisted or bent where they transition between framing members or connection points. Straps shall be bent only once at a given location though it is permissible that they be bent or twisted at multiple locations along their length.

C103.6 Fasteners. Fasteners shall meet the requirements of Sections C103.6.1 and Section C103.6.2, and shall be permitted to be screws or nails meeting the minimum length requirement shown in figures and specified in tables. Fastener spacing shall meet the requirements of Section C103.6.3.

C103.6.1 Screws. Screws shall be a minimum #8 size with head diameters no less than 0.28 inches. Screw lengths shall be no less than indicated in the Figures and in Tables. Permissible screws include deck screws and wood screws. Screws shall have at least 1 inch of thread. Fine threaded screws or drywall screws shall not be permitted. Screws shall be chosen with the appropriate diameter such that the shank adjacent to the head fits through the hole in the strap.

C103.6.2 Nails. Unless otherwise indicated in the provisions or drawings, where fastener lengths are indicated in Figures and Tables. as 1-¼ inches, 8d common nails with shank diameter 0.131 inches and head diameters no less than 0.28 inches shall be permitted. Unless otherwise indicated in the provisions or drawings, where fasteners lengths are indicated in Figures and Tables. as 3 inches, 10d common nails with shank diameter of 0.148 inches and head diameters no less than 0.28 inches shall be permitted.

C103.6.3 General fastener spacing. Fastener spacing for shear connections of lumber-to-lumber shall meet the requirements shown in Figure C103.6.3 and the following conditions.

C103.6.3.1 General fastener spacing. Fastener spacing shall meet the following conditions except as provided for in Section C103.6.3.3

The distance between fasteners and the edge of lumber that is less than 3-1/2 inches deep in the direction of the fastener length shall be a minimum of 3/4 inches.

1. The distance between fasteners and the edge of lumber that is more than 2 inches thick in the direction of the fastener length shall be a minimum of ½ inches.
2. The distance between a fastener and the end of lumber shall be a minimum of 2-½ inches.
3. The distance between fasteners parallel to the grain (center-to-center) shall be a minimum of 2-1/2 inches.
4. The distance between fasteners perpendicular to the grain (center-to-center) in lumber that is less than 3-1/2 inches deep in the direction of the fastener length shall be 1 inch.
5. The distance between fasteners perpendicular to the grain (center-to-center) in lumber that is more than 2 inches thick in the direction of the fastener length shall be ½ inch.

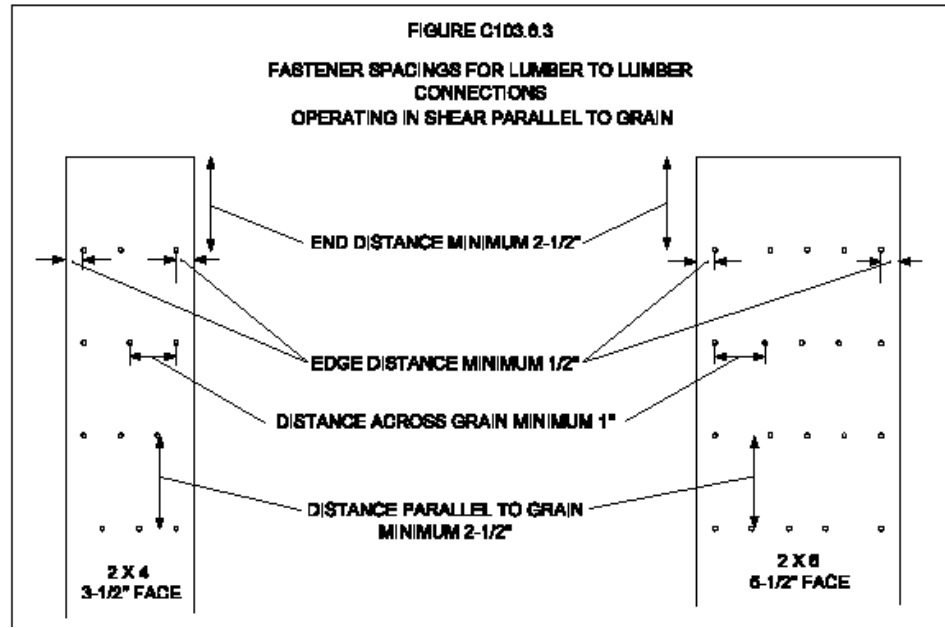
C103.6.3.2 Wood-to-wood connections of two members each 2 inch or less thick. Wood-to-wood connections fastener spacing shall meet the following conditions.

1. The distance between fasteners parallel to grain (center-to-center) shall be a minimum of 2-1/2 inches.
2. The distance between fasteners across grain (center-to-center) shall be a minimum of 1 inch.
3. For wood-to-wood connections of lumber at right angles, fasteners shall be spaced a minimum of 2-1/2 inches parallel to the grain and 1 inch perpendicular to the grain in any direction.

C103.6.3.3 Metal connectors to wood connections. Metal connectors to wood connections shall meet the following conditions.

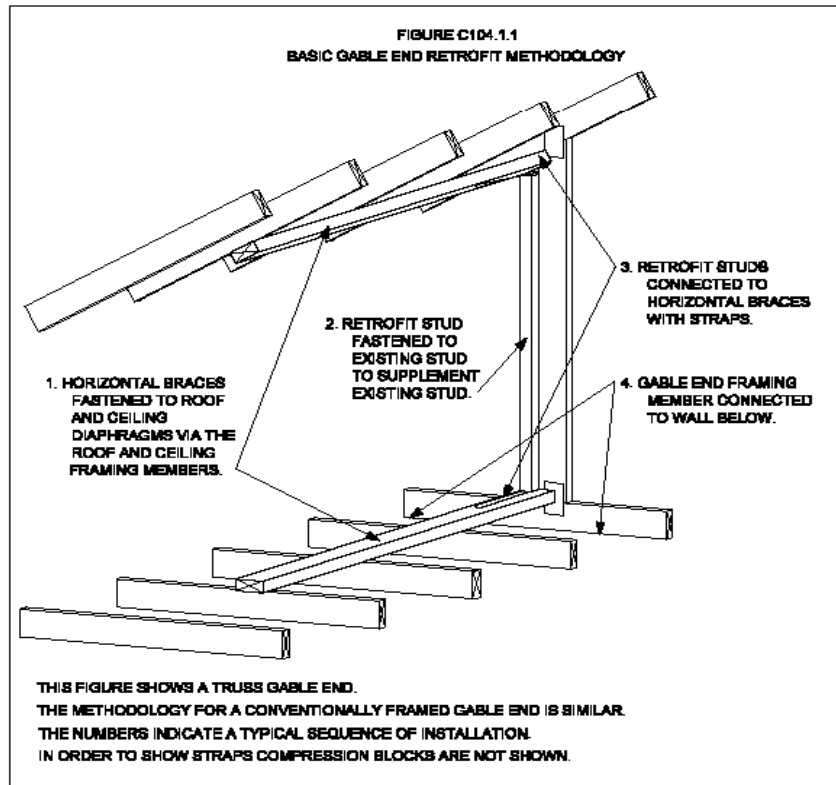
1. Fastener spacing to edge or ends of lumber shall be as dictated by the prefabricated holes in the connectors and the connectors shall be installed in accordance with the manufacturer.
2. Fasteners in 1-1/4 inch wide metal straps that are installed on the 1-1/2 inch broad face of lumber shall be a minimum 1/4 inches from either edge of the lumber. Consistent with Section C103.6.3.1 fasteners shall be allowed to be spaced according to the fastener holes fabricated into the strap.
3. Fasteners in metal nail plates shall be spaced a minimum of ½ inches across wood grain and a minimum of 1-1/2 inches parallel to wood grain.

SECTION C104
RETROFITTING GABLE END WALLS TO ENHANCE WIND RESISTANCE



SECTION C104
RETROFITTING GABLE END WALLS TO ENHANCE WIND RESISTANCE

C104.1 General. These prescriptive methods of retrofitting are intended to increase the resistance of existing gable end construction for out-of-plane wind loads resulting from high wind events. The ceiling diaphragm shall be comprised of minimum 1/2 inch thick drywall, minimum nominal 3/8 inch thick wood structural panels, or plaster. An overview isometric drawing of one kind of gable end retrofit to improve wind resistance is shown in Figure C104.1.1.



C104.2 Horizontal braces. Horizontal braces shall be installed approximately perpendicular to the roof and ceiling framing members at the location of each existing gable end stud greater than 3 feet in length. Unless it is adjacent to an omitted horizontal brace location, horizontal braces shall be minimum 2x4 dimensional lumber as defined in Section C103.3. A single horizontal brace is required at the top and bottom of each gable end stud for Retrofit Configuration A, B, or C and two horizontal braces are required for Retrofit Configuration D. Maximum heights of gable end wall studs and associated retrofit studs for each Retrofit Configuration shall not exceed the values listed in Table C104.2. Horizontal braces shall be oriented with their broad faces across the roof or ceiling framing members, be fastened to a minimum of three framing members, and extend at least 6 feet measured perpendicularly from the gable end plus 2-1/2 inches beyond the last top chord or bottom chord member (rafter or ceiling joist) from the gable end as shown in Figure C104.2(1), Figure C104.2(2), Figure C104.2(3), and Figure C104.2(4).

**TABLE C104.2
STUD LENGTH LIMITATIONS BASED ON EXPOSURE AND DESIGN WIND SPEED**

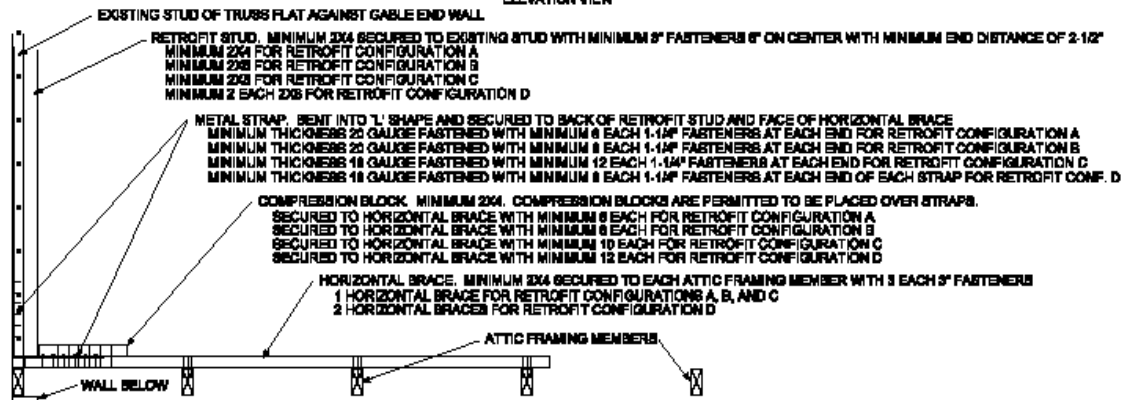
Exposure Category	Maximum 3-Sec Gust Basic Wind Speed ^a	Maximum Height of Gable End Retrofit Stud ^b			
		A	B	C	D
C	110	8'-0"	11'-3"	14'-9"	16'-0"
C	120	7'-6"	10'-6"	13'-6"	16'-0"
C	130	7'-0"	10'-0"	12'-3"	16'-0"
C	140	7'-0"	10'-0"	12'-3"	16'-0"
C	150	6'-6"	8'-9"	11'-0"	16'-0"
B	110	8'-0"	12'-3"	16'-0"	N/R ^c
B	120	8'-0"	11'-3"	14'-9"	16'-0"
B	130	8'-0"	11'-3"	14'-9"	16'-0"
B	140	7'-6"	10'-6"	13'-6"	16'-0"
B	150	7'-0"	10'-0"	12'-3"	16'-0"
	Retrofit Configuration -->	A	B	C	D

For SI: 1 Inch = 25.4mm, 1 Foot = 304.8mm

- a. Interpolation between given wind speeds not permitted.
- b. Existing gable end studs less than or equal to 3'-0" in height shall not require retrofitting.
- c. N/R = Not Required. Configuration C is acceptable to 16'-0" maximum height.

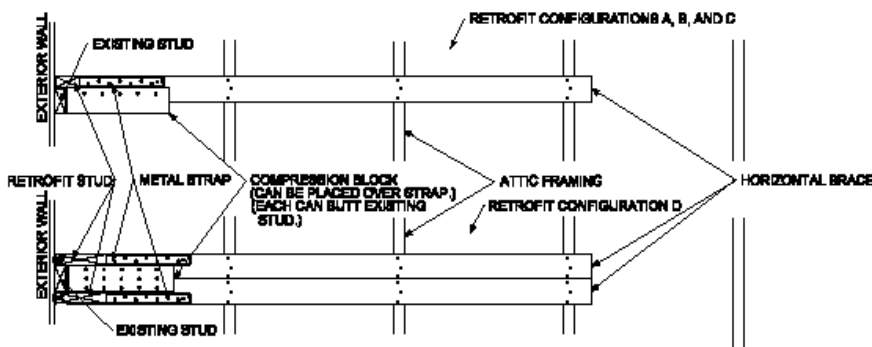
FIGURE C104.2 (1)
TRUSS FRAMED GABLE END, L-BENT STRAP

ELEVATION VIEW



FASTENERS SHALL NOT BE PLACED CLOSER TO ENDS OF LUMBER THAN 2-1/2".
 FASTENERS SHALL NOT BE PLACED CLOSER TO EDGES OF LUMBER THAN 1/2" EXCEPT WHERE STRAPS DICTATE OTHERWISE.
 THE NUMBER OF FASTENERS SHOWN IS NOT NECESSARILY THE NUMBER REQUIRED.

PLAN VIEWS



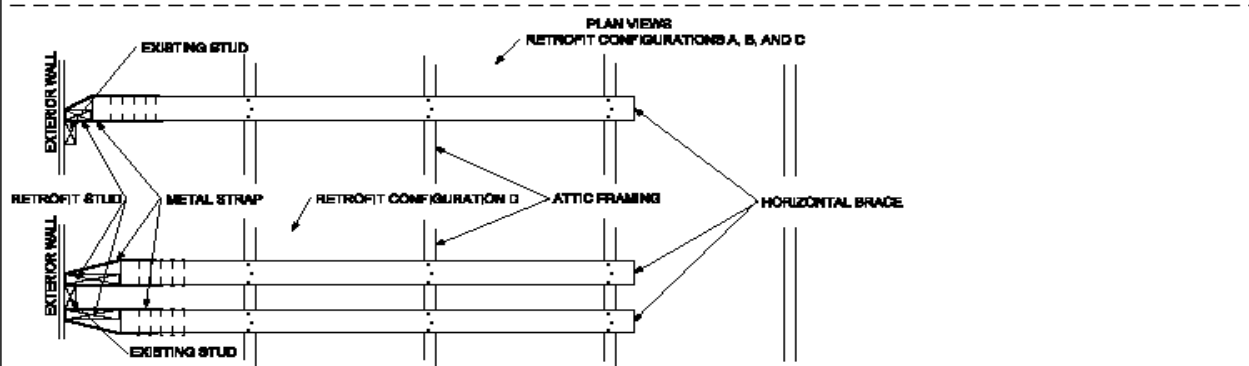
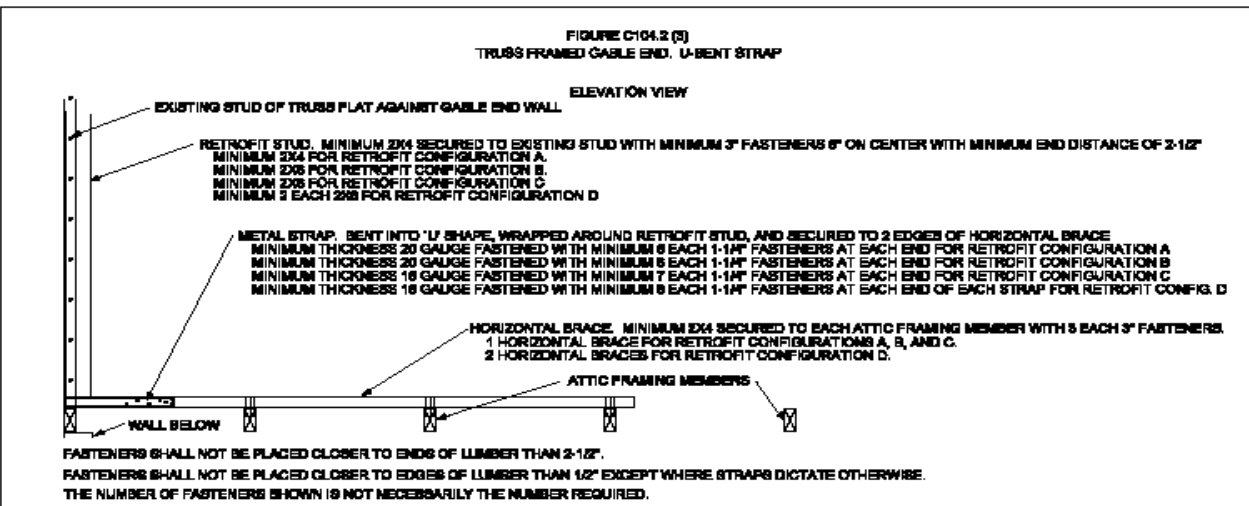
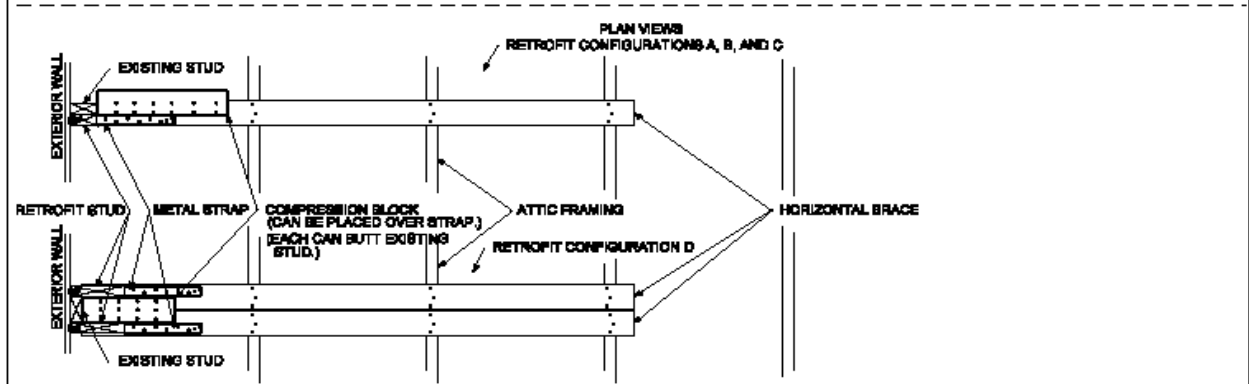
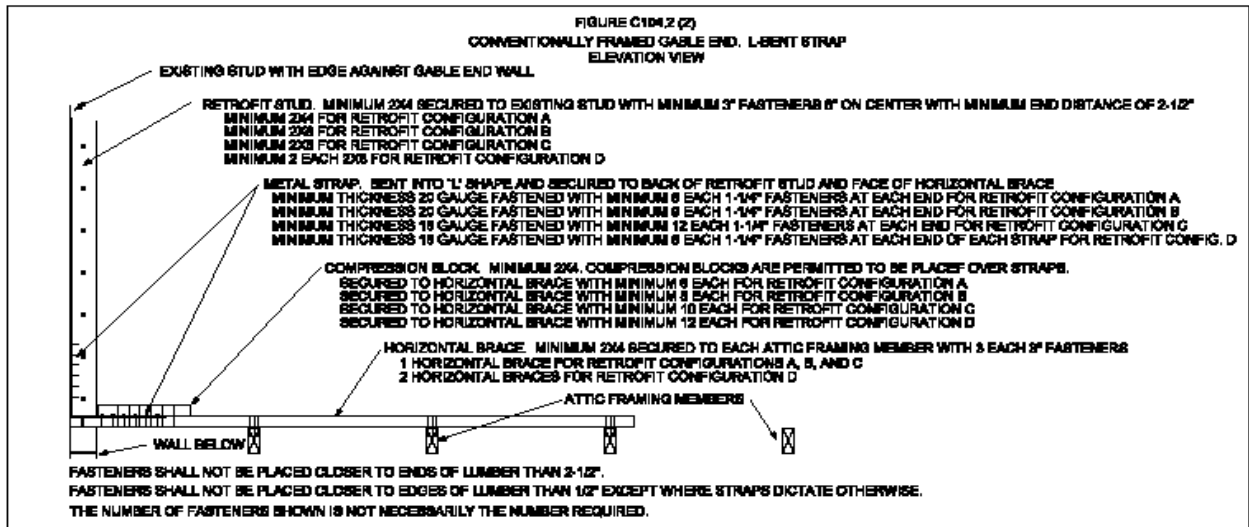
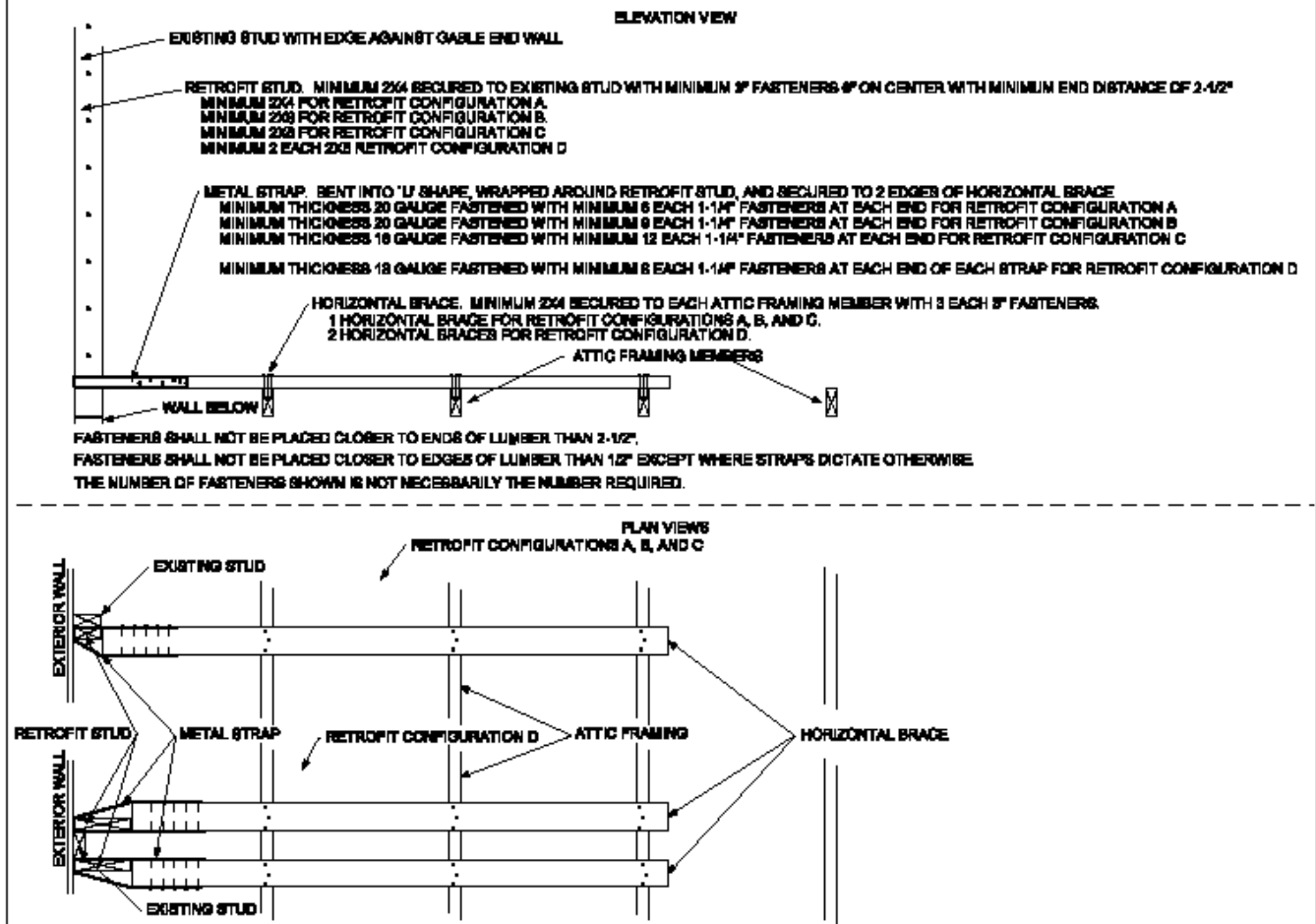


FIGURE C104.2 (4)
CONVENTIONALLY FRAMED GABLE END, U-BENT STRAP



C104.2.1 Existing gable end studs. If the spacing of existing vertical gable end studs in conventionally framed or the truss gable ends is greater than 24 inches, a new stud and corresponding horizontal braces shall be installed such that the maximum spacing between existing and added studs shall be no greater than 24 inches. Additional gable end wall studs shall not be required at locations where their length would be 3 feet or less. Each end of each required new stud shall be attached to the existing roof framing members (truss top chord or rafter and truss bottom chord or ceiling joist) using a minimum of two 3 inch toenail fasteners (#8 wood screws or 10d nails) and a metal connector with minimum uplift capacity of 175 pounds, or nail plates with a minimum of four 1-1/4 inch long fasteners (#8 wood screws or 8d nails).

C104.2.2 Main method of installation. Each horizontal brace shall be fastened to each existing roof or ceiling member that it crosses using three 3-inch long fasteners (#8 wood screws or 10d nails) as indicated in Figure C104.2(1) and Figure C104.2(3) for trusses and Figure C104.2(2) and Figure C104.2(4) for conventionally framed gable end walls. Alternative methods for providing horizontal bracing of the gable end studs as provided in Sections C104.2.3 through C104.2.9 shall be allowed in lieu of this primary installation method.

C104.2.3 Omitted horizontal brace. Where impediments, other permanently attached obstacles or conditions exist that prevent installation in accordance with Section C104.2.2 horizontal braces may be omitted for height limitations corresponding to Retrofit Configurations A and B as defined in Table C104.2 provided installation is as indicated in Figure C104.2.3 and provided all of the following conditions are met. This method is not allowed for Retrofit Configurations C or D.

1. There shall be at least two horizontal braces on each side of an omitted horizontal brace or at least one horizontal brace if it is the end horizontal brace. Omitted horizontal braces must be separated by at least two horizontal braces even if that location is comprised of two retrofit studs and two horizontal braces.

2. Horizontal braces adjacent to the omitted horizontal brace shall be 2x6 lumber, shall butt against the existing studs, and shall be fastened to each existing roof or ceiling member that it crosses using three 3-inch long fasteners (#8 wood screws or 10d nails). For Retrofit Configuration B, 4 fasteners shall be required on at least one of the connections between the horizontal brace and the existing roof and ceiling framing members. Fasteners shall be spaced a minimum of 3/4" from the edges of the horizontal braces and a minimum of 1-3/4" from adjacent fasteners.
3. Where the existing studs on each side of an omitted horizontal brace have their broad face perpendicular to the gable end wall, the retrofit studs at those locations and the retrofit stud at the omitted horizontal brace locations shall be sized such that they protrude a minimum of 3-1/2 inches beyond the interior edge of the existing studs for both Retrofit Configurations A and B. The edges of the three retrofit studs facing towards the interior of the attic shall be aligned such that they are the same distance from the gable end wall.
4. Retrofit studs shall be fastened to existing studs in accordance with Section C104.3.
5. Retrofit studs adjacent to the omitted horizontal brace shall be fastened to the horizontal brace using straps in accordance with Table C104.4.1 consistent with the size of the retrofit stud. The method applicable to Table C104.4.2 is not allowed.
6. A strong back made of minimum of 2x8 lumber shall be placed parallel to the gable end and shall be located on and span between horizontal braces on the two sides of the omitted horizontal brace and shall extend beyond each horizontal braces by a minimum of 2-1/2 inches. The strong back shall be butted to the three retrofit studs. The strong back shall be attached to each of the horizontal braces on which it rests with 5 3 inch long fasteners (#8 screws or 8d nails). Those fasteners shall be spaced a minimum of 3/4 inch from any edge of lumber and shall be spaced a minimum of 2-1/2 inch from each other. Additional compression blocks shall not be required at locations where a strong back butts against a retrofit stud.
7. The retrofit stud at the location of the omitted horizontal braces shall be fastened to the strong back using a connector with minimum uplift capacity of 800 pounds and installed such that this capacity is oriented in the direction perpendicular to the gable end wall.
8. The use of shortened horizontal braces using the alternative method of Section C104.2.5 is not allowable for horizontal braces adjacent to the omitted horizontal braces.
9. Horizontal braces shall be permitted to be interrupted in accordance with Section C104.2.8.

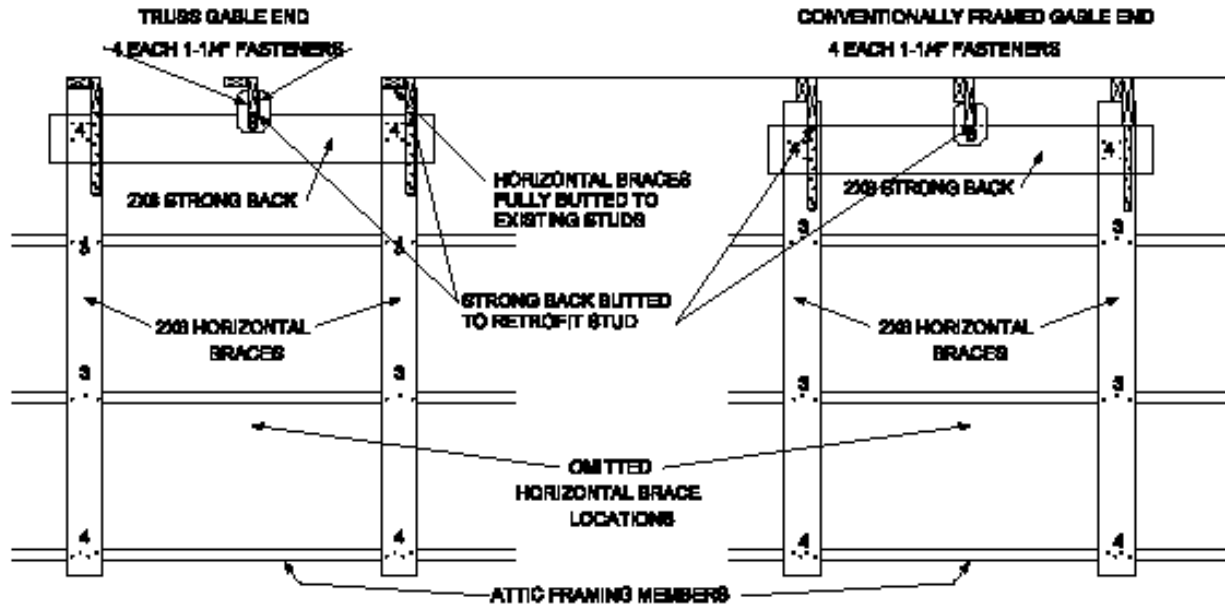
FIGURE G104.2.3
OMITTED HORIZONTAL BRACE

OVERVIEW

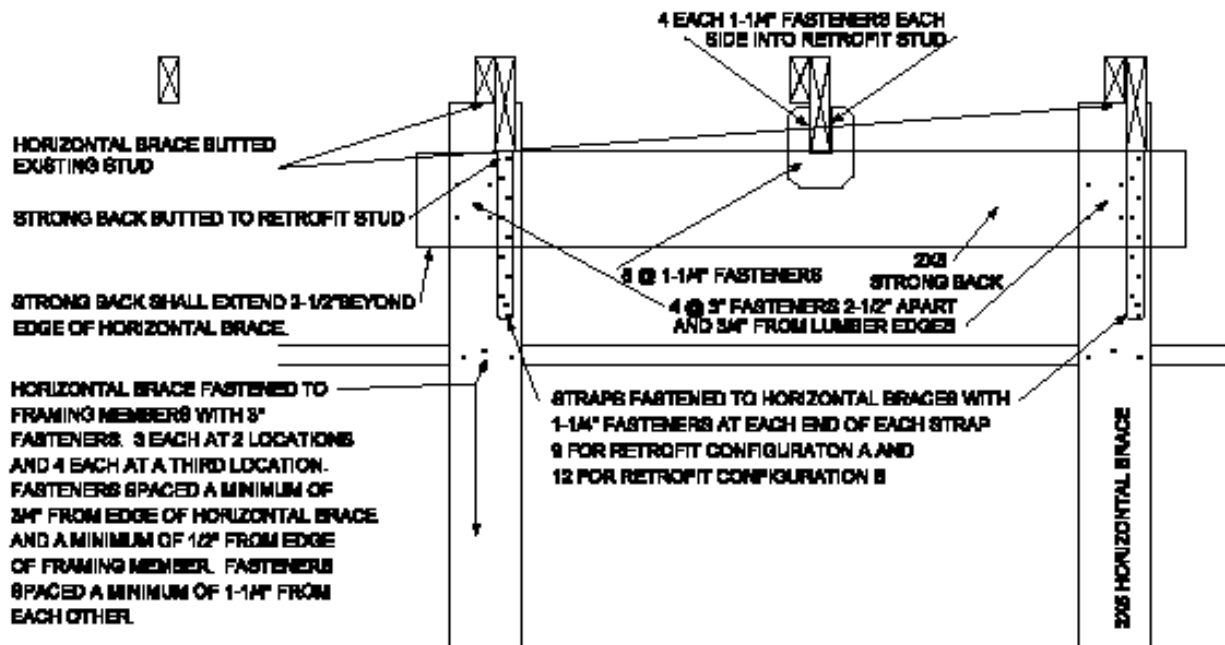
PLAN VIEWS

RETROFIT CONFIGURATION A AND B ONLY
NOT ALLOWED FOR RETROFIT CONFIGURATION C OR D

UNIDENTIFIED NUMBERS INDICATE THE NUMBER OF FASTENERS.



DETAILS OF CONVENTIONALLY FRAMED GABLE



C104.2.4 Omitted horizontal brace and retrofit stud. Where impediments, other permanently attached obstacles or conditions exist that prevent installation in accordance with Section C104.2.2 or Section C104.2.3 by not permitting installation of horizontal braces, then retrofit studs and horizontal brace shall be permitted to be omitted from those locations by installation of ladder assemblies for Retrofit Configurations A and B as defined in Table C104.2 provided all of the following conditions are met. This method is not allowed for Retrofit Configurations C or D.

1. No more than two ladder assemblies are permitted on a single gable end.
2. There shall be at least two retrofit studs and horizontal brace assemblies on either side of the locations where the retrofit studs and horizontal bracing members are omitted (no two ladder braces bearing on a single retrofit stud).
3. Where the existing studs on each side of an omitted horizontal brace have their broad face parallel to the gable end wall the retrofit studs at those locations and the retrofit stud at the omitted horizontal brace locations shall be 2x6 lumber for Retrofit Configuration A and 2x8 lumber for Retrofit Configuration B.
4. Horizontal braces adjacent to the omitted horizontal brace shall be 2x6 lumber and be fastened to each existing roof or ceiling member crossed using three 3-inch long fasteners (#8 wood screws or 10d nails) as indicated in Figure C104.2(1) and Figure C104.2(3) for trusses and Figure C104.2(2) and Figure C104.2(4) for conventionally framed gable end wall. For Retrofit Configuration B, 4 fasteners shall be required on at least one of the connections between the horizontal brace and the existing roof and ceiling framing members.
5. Ladder rungs /shall be provided across the location of the omitted retrofit studs as indicated in Figure C104.2.4(1) for trusses and Figure C104.2.4(2) for conventionally framed gable end walls.
6. Ladder rungs shall be made of at a minimum 2x4 lumber oriented with their broad face horizontal and spaced a maximum of 16-inches on center vertically.
7. Where ladder rungs cross structural members such as the existing stud at the omitted retrofit stud location or gable end vent framing they shall be connected to each other with a metal connector with a minimum capacity of 175 pounds in the direction perpendicular to the gable end wall.
8. Notching of the ladder rungs shall not be permitted unless the net depth of the framing member is a minimum of 3-1/2 inches.

C104.2.5 Short horizontal brace. Where impediments, other permanently attached obstacles or conditions exist that prevent installation in accordance with Sections C104.2.2, C104.2.3, or C104.2.4 by not permitting extension of horizontal braces across the existing framing members such that they can be fastened to a minimum of three framing members and extend at least 6-feet from the gable end wall plus 2-1/2 inches beyond the last roof or ceiling framing member, the horizontal braces may be shortened provided installation is as indicated in Figure C104.2.5 and provided that all of the following conditions are met.

1. The horizontal brace shall be installed across a minimum of two framing spaces, extend a minimum of 4-feet from the gable end wall plus 2-1/2 inches beyond the last roof or ceiling framing member, and be fastened to each existing framing member with three 3-inch long fasteners (#8 wood screws or 10d nails).
2. An anchor block shall be fastened to the side of the horizontal brace in the second framing space from the gable end wall as shown in Figure C104.2.5. The anchor block lumber shall have a minimum edge thickness of 1-1/2 inches and the depth shall be as a minimum the depth of the existing roof or ceiling framing member. Six 3-inch long fasteners (#8 wood screws or 10d nails) shall be used to fasten the anchor block to the side of the horizontal brace.
3. The anchor block shall extend into the space between the roof or ceiling framing members a minimum of one-half the depth of the existing framing members at the location where the anchor block is installed. The anchor block shall be installed tightly between the existing framing members such that the gap at either end shall not exceed $\frac{1}{8}$ inch.
4. The use of omitted horizontal braces using the method of Section C104.2.3 adjacent to a short horizontal brace as defined in this section is not permitted.

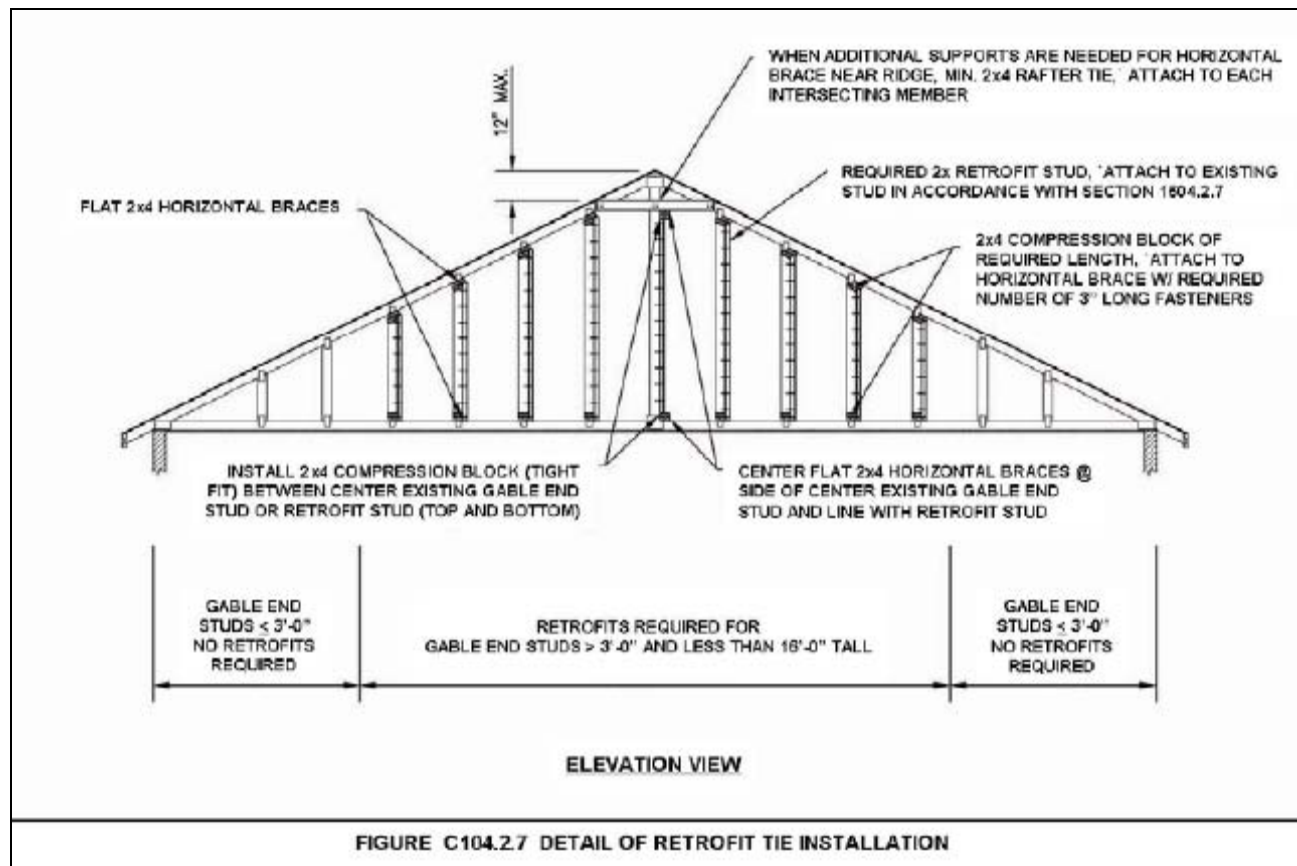
C104.2.6 Installation of horizontal braces onto webs or vertical members of trusses. Where existing conditions preclude installation of horizontal braces on truss top or bottom chords they shall be permitted to be installed on truss webs or vertical members of trusses provided all of the following conditions are met.

1. Horizontal braces shall be installed as close to the top or bottom chords as practical without altering the truss or any of its components and not more than three times the depth of the truss member to which it would ordinarily be attached.
2. A racking block, comprised of an anchor block meeting the definition of anchor block of Section C102 or comprised of minimum 15/32 inch plywood or 7/16 inch OSB, shall be fastened to the horizontal brace in the second framing space from the gable end wall. The racking block shall extend towards the diaphragm (roof or

ceiling as appropriate) so that the edge of the racking block closest to the diaphragm is within 1/2 the depth of the existing framing member from the diaphragm surface. They shall be attached to horizontal braces using six fasteners (#8 wood screws or 10d nails) of sufficient length to provide 1-1/2 inches of penetration into the horizontal brace.

3. Racking blocks can be fastened to any face or edge of horizontal braces between each web or truss vertical posts to which a horizontal brace is attached. Racking blocks can be on alternate sides of horizontal braces. Racking blocks shall be installed tightly between the lumber of truss members or truss plates such that the gap at either end shall be a maximum of 1/8 inch.

C104.2.7 Alternative method of installation of horizontal braces at truss ridges. Where impediments such as truss plates or access for installation of fasteners limits or restricts installation of horizontal braces near the peak of the roof, ridge ties may be added to provide support for the required horizontal brace. The top of added ridge tie members shall be installed a maximum of 16-inches below the existing ridge line or 4 inches below impediments. The added ridge tie members shall be installed across a minimum of three bays, but no less than 6-feet from the gable end wall plus 2-1/2 inches beyond the last roof or ceiling framing member to permit fastening of the horizontal brace. A minimum of a 2x4 member shall be used for each ridge tie and fastening shall consist of two 3-inch long wood screws, four 3 inch long 10d nails or two 3-1/2 inch long 16d nails driven through and clinched at each top chord or web member intersected by the ridge tie as illustrated in Figure C104.2.7.



C104.2.8 Interrupted horizontal braces. Where impediments, other permanently attached obstacles or conditions exist that prevent installation of horizontal braces in accordance with Section C104.2.2 by preventing the installation of a single continuous horizontal braces then horizontal braces shall be permitted to be interrupted using the methods shown in Figure C104.2.8(1), Figure C104.2.8(2), and Figure C104.2.8(3). For interruptions that occur in the attic framing space closest to the gable end, nine 3 inch fasteners shall be used to connect each section of the interrupted horizontal braces. For interruptions that occur in the second attic space from the gable end, six 3 inch fasteners shall be used to connect each section of the interrupted horizontal braces. For interruptions that occur in the attic framing space farthest from the gable end, three 3 inch fasteners shall be used to connect each section of the interrupted horizontal braces. Horizontal braces shall be continued far enough to allow connections to three existing roof framing members as shown in Figure C104.2.8(1), Figure C104.2.8(2), or Figure C104.2.8(3). Fasteners shall be spaced in accordance with Section C103.6.3. Lumber members used to form horizontal braces shall be the same width and depth as required for an un-interrupted member.

FIGURE C104.2.5 (1)
 SPLICED HORIZONTAL BRACES
 SECTION VIEWS

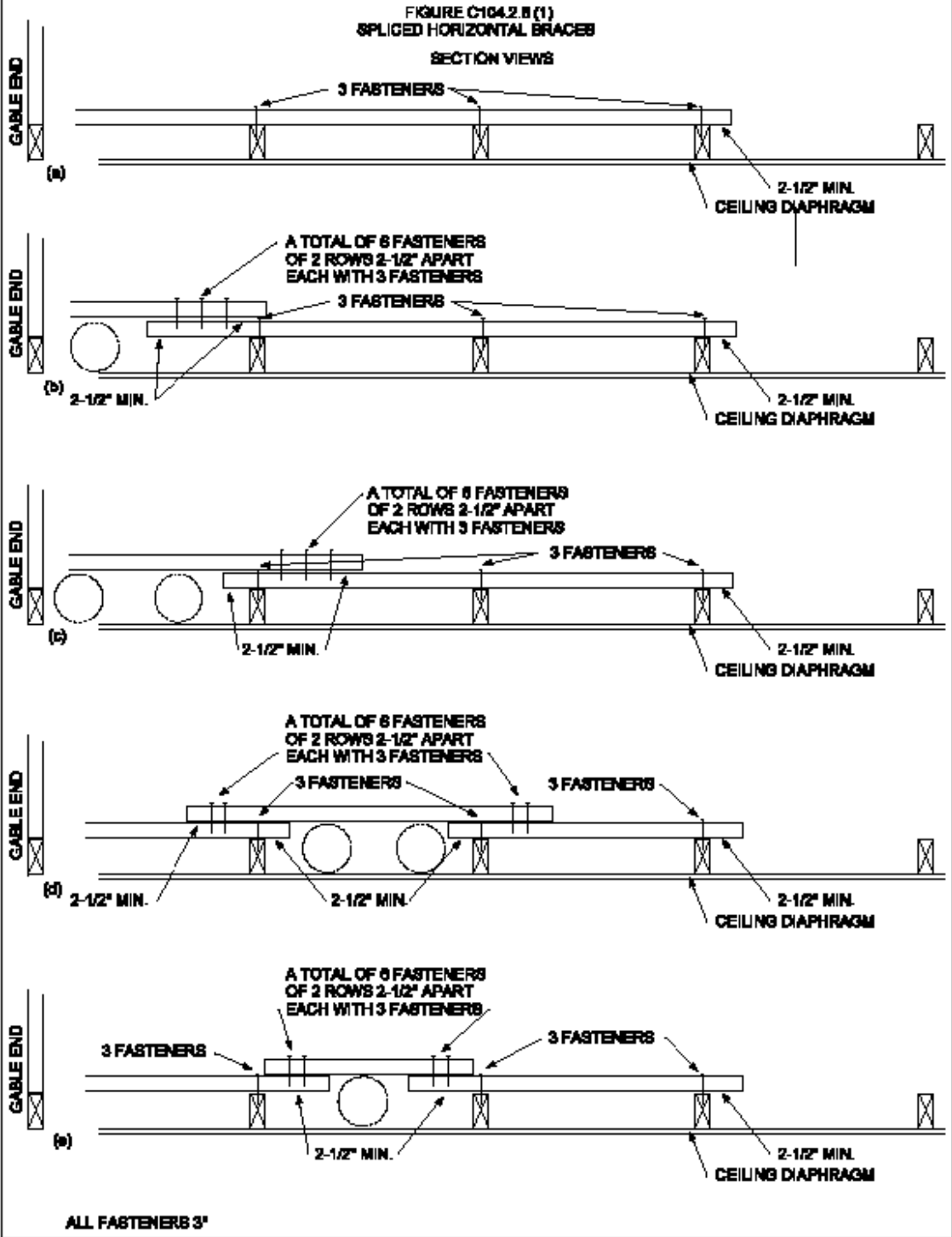
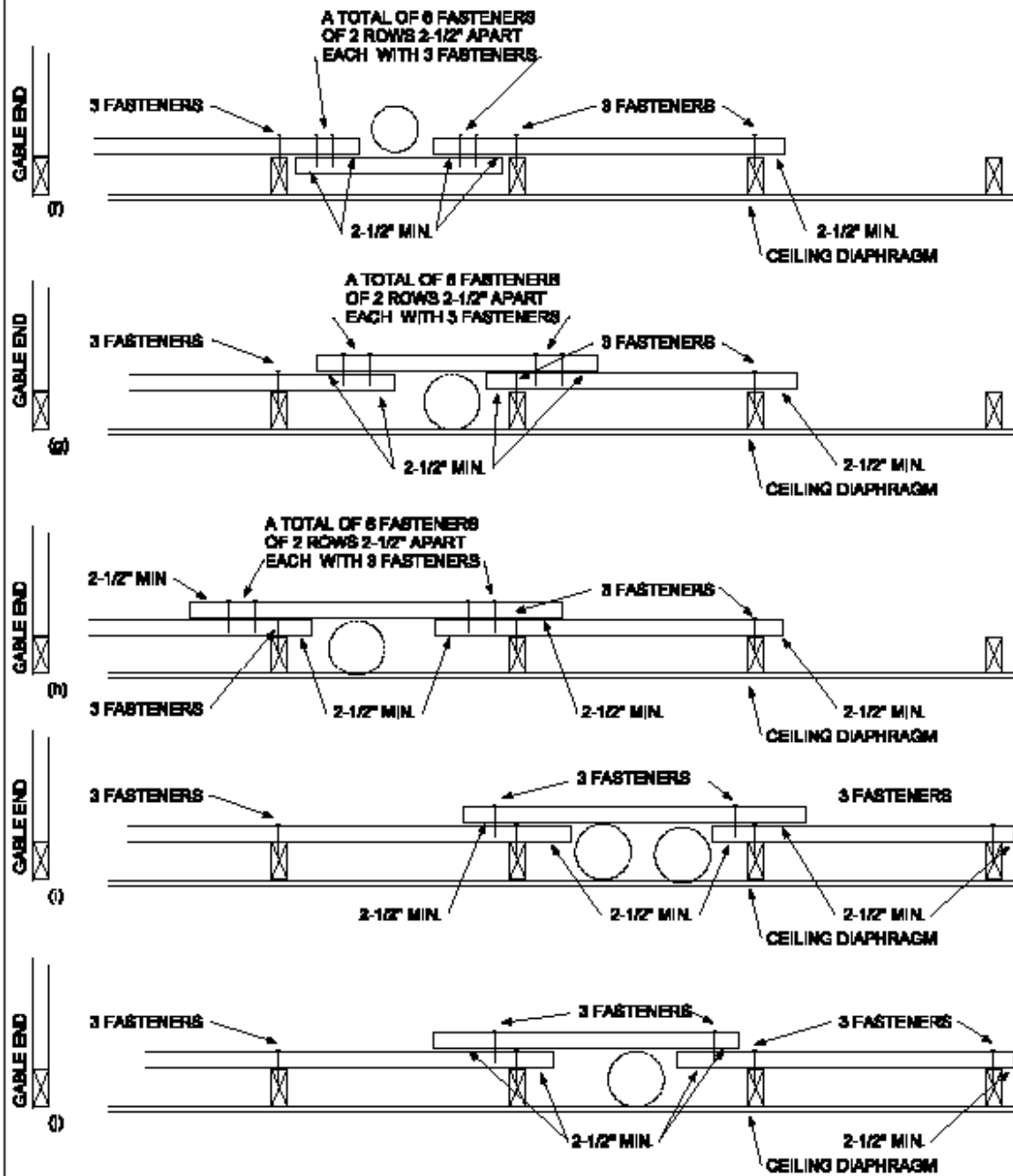
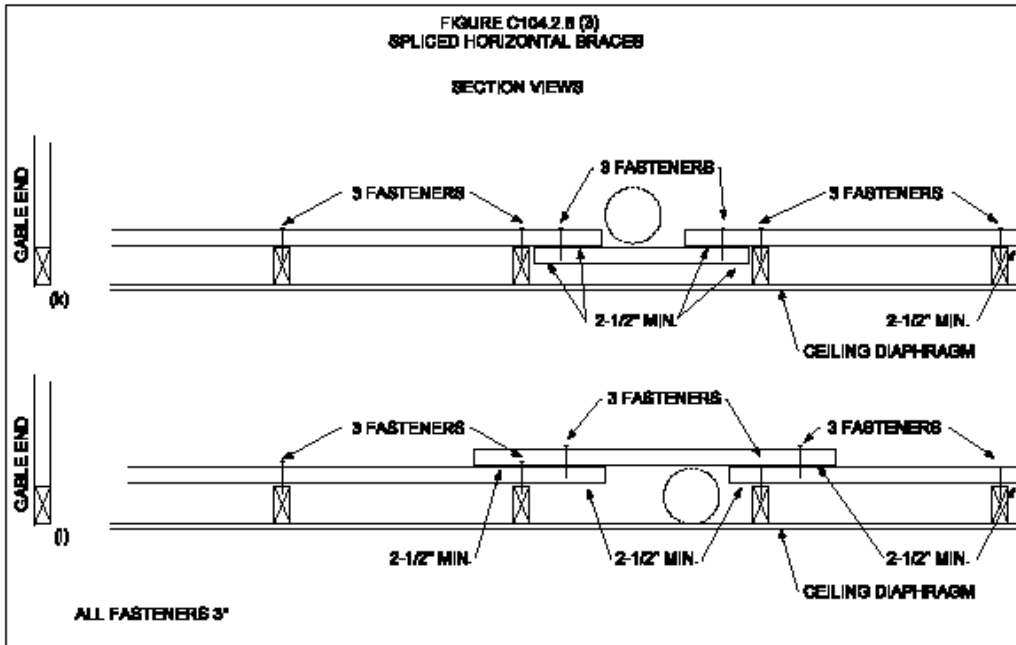


FIGURE C104.2.B (2)
 SPLIGED HORIZONTAL BRACES

SECTION VIEWS



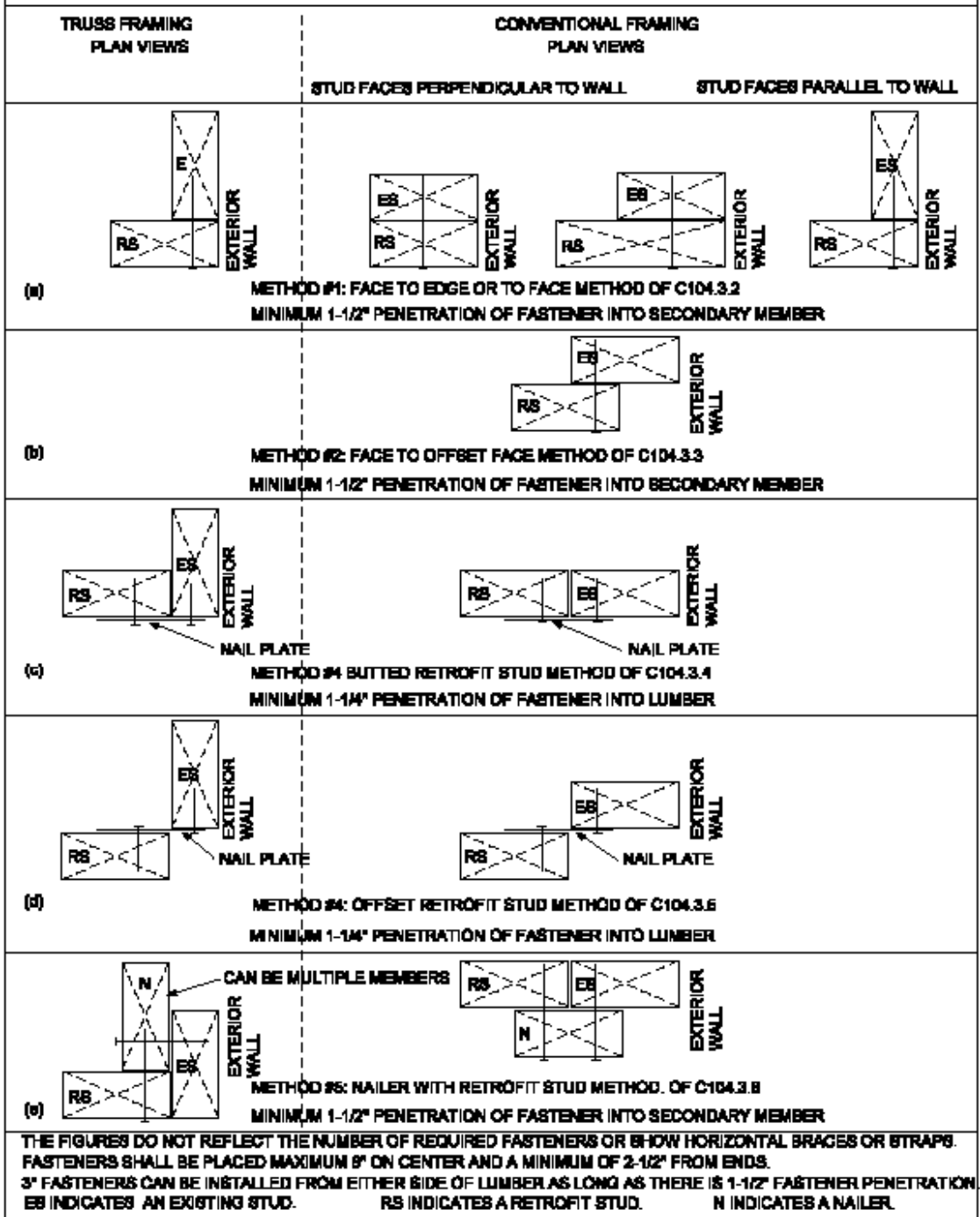
ALL FASTENERS 3"



C104.2.9 Piggyback trusses. Piggyback trusses (trusses composed of two members one above the other) shall be permitted to be retrofitted if either of the following cases is true. 1. The existing studs in both the upper truss and the lower truss to which wall sheathing, panel siding, or other wall facade are attached are sufficiently in line that retrofit studs can be installed and connections made between the two with retrofit stud(s). 2. The same as condition 1 except the studs in the upper truss are not sufficiently in line with ones below and the existing studs in the upper truss are 3 feet or shorter. For condition 1 both the lower stud and the upper stud shall be retrofitted using the methods of Section C104.2. For condition two the retrofit stud shall be connected to the lower studs using the methods of Section C104.2 and be continuous from the bottom horizontal brace to the top horizontal brace. No connection is required between the retrofit stud and the upper stud. In both conditions the bottom chord of the piggy back truss section shall be fastened to each retrofit stud using a connector with minimum axial capacity of 175 pounds.

C104.3 Retrofit studs. Retrofit studs shall be installed in accordance with Section C104.3.1 and using one of the five methods of Sections C104.3.2, through C104.3.6 and as shown in Figure C104.3. For the Retrofit Configuration derived from Table C104.2 the size of retrofit studs shall be as indicated in Table C104.4.1 or Table C104.4.2. Retrofit studs shall extend from the top of the lower horizontal brace to the bottom of the upper horizontal brace except that a maximum gap of 1/8 inch is allowed at the bottom and 1/2 inch at the top. Where wall sheathing, panel siding, or other wall facade is fastened to gable end studs not manufactured into a truss, i.e. are field installed, retrofit studs shall be applied to those field installed studs in accordance with Section C104.2.1.

FIGURE C104.3
METHODS OF INSTALLING RETROFIT STUDS



C104.3.1 Fastening. Where nail plates are not used, retrofit studs shall be attached to existing studs using 3 inch fasteners at a maximum of 6 inches on center but no closer than 2-1/2 inches on center with fasteners no closer than 2-1/2 inches to the ends of members.

C104.3.2 Method #1: Face to edge or to face method. Retrofit studs shall be installed immediately adjacent to existing (Section C104.2) gable end wall studs as indicated in Figure C104.3(a). The retrofit studs shall overlap the edge or side of the existing stud by a minimum of 1-1/4 inches. Fasteners shall be installed as specified in Section C104.3.1.

C104.3.3 Method #2: Face to face offset method. Retrofit studs shall be installed against the face of existing studs as indicated in Figure C104.3(b) such that the faces overlap a minimum of 1-1/2 inch and the edge distance to fasteners is no less than 3/4 inch. Fasteners shall be installed as specified in Section C104.3.1.

C104.3.4 Method #3: Butted retrofit stud method. Provided that all of the following fastening conditions are met retrofit studs shall be permitted to be butted by their edge or face to existing studs with the addition of nail plates as indicated in Figure C104.3(c) and Figure C104.3.4.

1. The 1-1/2 inch edge of retrofit studs shall be installed against the 1-1/2 inch or the broad face of existing studs.
2. A minimum of two nail plates shall be used.
3. Fasteners used to secure nail plates to studs shall be a minimum 1-1/4 inch long (#8 wood screws or 8d nails).
4. Fasteners placed in nail plates shall be a minimum of 2-1/2 inches along the length of lumber. A fastener shall be placed in nail plates a maximum of 6 inches from the ends of the shorter stud.
5. Fasteners shall be placed a minimum of a 1/2 inch from the edges of the studs. Fasteners shall be placed a maximum of 1-1/2 inches from the abutting vertical edges of existing studs and retrofit studs.
6. There shall be at least 3 fasteners through nail plates into all existing and retrofit studs to which it is attached.
7. Where there are 3 fasteners through nail plates onto a single existing or retrofit stud then nail plates shall be spaced a maximum of 15 inches on center.
8. Where there are more than 3 fasteners through nail plates onto a single existing or retrofit stud then nail plates shall be spaced a maximum of 20 inches on center.
9. In line fasteners used to secure nail plates shall be spaced vertically a minimum of 1-1/2 inches on center. Staggered fasteners used to secure nail plates shall be spaced horizontally a minimum of 1/2 inches.

FIGURE G104.3.4
NAIL PLATE FASTENING

ELEVATION VIEW

1. MINIMUM OF TWO PLATES VERTICALLY
CONNECTING THE TWO STUDS

2. NAIL PLATE

3. THE CLOSEST FASTENER SHALL BE
A MINIMUM OF 2-1/2" AND
A MAXIMUM OF 6" FROM
THE END OF THE SHORTER OF
THE EXISTING OR RETROFIT
STUDS.

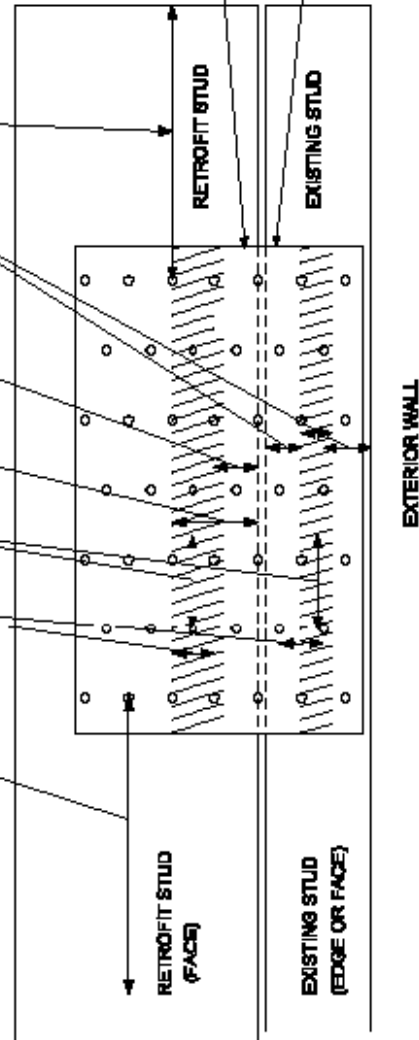
4. FASTENERS ON EXISTING STUD SHALL BE
A MINIMUM OF 1/2" FROM EITHER EDGE.

5. A SET OF FASTENERS SHALL
BE A MINIMUM OF 1/2" FROM
THE EDGE NEAREST THE
EXISTING STUD AND
A MAXIMUM OF 1-1/4"
FROM THE EDGE OF THE
RETROFIT STUD NEAREST
THE EXISTING STUD.
SEE NOTE BELOW.

6. IN LINE FASTENERS SHALL BE SPACED
VERTICALLY A MINIMUM OF 1-1/2"
ON CENTER.
IN LINE FASTENERS SHALL BE SPACED
HORIZONTALLY A MINIMUM OF 1/2"
AND A MINIMUM OF 2-1/2".

7. THE DISTANCE BETWEEN
FASTENERS ON PLATES SHALL
BE A MAXIMUM OF 20"
ON CENTER.

8. FASTENERS SHALL BE MINIMUM
1-1/4" LONG (86 WOOD
SCREWS OR 8D NAILS)



STUD SIZES MAY DIFFER FROM THOSE SHOWN.
DIAGONAL HATCHES INDICATE ALLOWABLE LATERAL RANGE
FOR FASTENERS.
THE RELATIONSHIP BETWEEN STUDS AND PLATES WILL VARY
ACCORDING TO THE PARTICULARS OF THE METHOD USED.

C104.3.5 Method #4: Offset retrofit stud method. Where retrofit studs are placed as indicated in Figure C104.3(d) retrofit studs shall be permitted to be offset from existing studs by use of nail plates such that the vertical corner of a retrofit stud shall be placed at the vertical corner of an existing stud as indicated in Figure C104.3(d) and Figure C104.3.4 provided the fastening conditions of Section C104.3.4 are met.

C104.3.6 Method #5: Nailer with retrofit stud method. Retrofit studs and existing studs shall be permitted to be connected using non-continuous 2x4 nailers as indicated in Figure C104.3(e) provided the following conditions are met.

1. Both the existing stud and the retrofit stud shall be butted to nailers and both shall be fastened to the nailer with 3 inch long fasteners (#8 wood screws or 8d nails). Fasteners connecting each stud to the nailer shall be spaced 6 inches on center.
2. Fasteners into nailers from any direction shall be offset vertically by a minimum of 2-1/2 inches.
3. Fasteners into nailers shall be a minimum of 2-1/2 inches but not more than 6 inches from the end of the shorter of the existing stud and retrofit stud to which they are fastened.

C104.3.7 Reduced depth of retrofit studs. Retrofit studs may be reduced in depth by notching, tapering, or other methods at any number of locations along their length provided that all of the following conditions are met.

1. The retrofit stud to be reduced in depth shall be sized such that the remaining minimum depth of the member at the location of the notch (including cross cut kerfs) shall not be less than that required by Table C104.4.1 or Table C104.4.2.
2. The retrofit stud reduced in depth shall not be spliced within 12 inches of the location of notches. Splice members shall not be notched.
3. The vertical extent of notches shall not exceed 12 inches as measured at the depth of location of reduced depth.
4. A retrofit stud member reduced in depth shall be fastened to the side of the existing gable end wall studs in accordance with Section C104.3.1. Two additional 3 inch fasteners (#8 wood screws or 10d nails) shall be installed on each side of notches in addition to those required by Section C104.3.1.

C104.3.8 Retrofit stud splices. Retrofit studs greater than 8 feet in height may be field spliced in accordance with Figure C104.3.8.

C104.4 Connection between horizontal braces and retrofit studs. Connections between horizontal braces and retrofit studs shall comply with Section C104.4.1 or Section C104.4.2. Each retrofit stud shall be connected to the top and bottom horizontal brace members with a minimum of a 20 gauge 1-1/4 inch wide flat or coil metal strap with pre-punched holes for fasteners. Straps shall be fastened with 1-1/4 inch long fasteners (#8 wood screws or 8d nails) with the number of fasteners as indicated on Table C104.4.1 and Table C104.4.2. Fasteners shall be no closer to the end of lumber than 2-1/2 inches.

C104.4.1 L-bent strap method. Retrofit studs shall be connected to horizontal braces or to strong backs in accordance with Figure C104.2(1), Figure C104.2(2), or Figure C104.2.3, and shall comply with the following conditions.

1. A strap shall be applied to the edges of a retrofit stud nearest the gable end wall and to the face of horizontal braces using at each end of the strap the number of fasteners specified in Table C104.4.1. Straps shall be long enough so that each strap extends sufficient distance onto the vertical face of the retrofit stud that the fastener closest to the ends of the studs is a minimum of 2-1/2 inches from the end of the stud. Straps shall be allowed to be twisted to accommodate the transition between the tops of retrofit studs and horizontal bracings following roof pitches.
2. Compression blocks shall be installed on the horizontal braces directly against either the existing vertical gable end wall stud or the retrofit stud. Figure C104.2(1) (trusses) and Figure C104.2(2) (conventionally framed) show the installation of the compression block against the existing vertical gable end wall stud with the strap from the retrofit stud running beside the compression block. Compression blocks shall be allowed to be placed over straps. Compression blocks shall be fastened to the horizontal braces with at least the minimum number of 3 inch long fasteners (#8 wood screws or 10d nails) specified in Table C104.4.1. End and edge distances for fasteners shall be in accordance with Section C103.6.3.

**TABLE C104.4.1
ELEMENT SIZING AND SPACING FOR L-BENT RETROFIT METHOD**

	Retrofit	Retrofit	Retrofit	Retrofit
	Config.	Config.	Config.	Config.
<u>Retrofit Elements</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
<u>Minimum size and number of Horizontal Braces</u>	<u>2x4</u>	<u>2x4</u>	<u>2x4</u>	<u>2 each 2x4</u>
<u>Minimum size and number of Retrofit Studs</u>	<u>2x4</u>	<u>2x6</u>	<u>2x8</u>	<u>2 each 2x8</u>
<u>Minimum number of fasteners connecting each end of straps to Retrofit Studs or to Horizontal Braces</u>	<u>6</u>	<u>9</u>	<u>12</u>	<u>8 on each strap</u>
<u>#8 screws or 10d nails 1-1/4" long</u>				
<u>Minimum number of fasteners to connect Compression Blocks to Horizontal Braces</u>	<u>6</u>	<u>8</u>	<u>10</u>	<u>12</u>
<u>#8 screws or 10d nails 3" long</u>				

For SI: 1 Inch = 25.4mm, 1 Foot = 304.8mm

C104.4.2 U-bent strap method. Retrofit studs shall be connected to horizontal braces in accordance with Figure C104.2(3) or Figure C104.2(4), shall be limited to Retrofit Configurations A and B (Table C104.2), and shall comply with the following conditions.

1. Straps shall be of sufficient length to meet the requirements for the number of fasteners in accordance with Table C104.4.2 and to meet the end distance requirements of Section C103.6.3 shall be shaped around retrofit studs and fastened to the edges of horizontal braces. Straps shall wrap the back edge of the retrofit stud snugly with a maximum gap of ¼ inches. Rounded bends of straps shall be allowed. One fastener shall be installed that connects each strap to the side of the associated retrofit stud.
2. The horizontal brace shall butt snugly against the retrofit stud with a maximum gap of ¼ inches.
3. Straps shall be allowed to be twisted to accommodate the transition between the tops of retrofit studs and horizontal braces that follow the roof pitch.

**TABLE C104.4.2
ELEMENT SIZING AND SPACING FOR U-BENT RETROFIT METHOD**

	Retrofit	Retrofit	Retrofit	Retrofit
	Config.	Config.	Config.	Config.
<u>Retrofit Elements</u>	<u>A</u>	<u>B</u>	<u>C</u>	<u>D</u>
<u>Minimum size and number of Horizontal Braces</u>	<u>2x4</u>	<u>2x4</u>	<u>2x4</u>	<u>2 each 2x4</u>
<u>Minimum size and number of Retrofit Studs</u>	<u>2x4</u>	<u>2x6</u>	<u>2x8</u>	<u>2 each 2x8</u>
<u>Minimum number of fasteners connecting Straps To each edge of Horizontal Braces</u>	<u>6</u>	<u>7</u>	<u>7</u>	<u>6 on side of each strap</u>
<u>#8 screws or 10d nails 1-1/4" long</u>				

For SI: 1 Inch = 25.4mm, 1 Foot = 304.8mm

C104.5 Connection of gable end wall to wall below. The bottom chords or bottom members of wood framed gable end walls shall be attached to the wall below using one of the methods prescribed in Sections C104.5.1 or C104.5.2. The particular method chosen shall correspond to the framing system and type of wall construction encountered.

C104.5.1 Truss gable end wall. The bottom chords of the gable end wall in a truss gable shall be attached to the wall below using right angle brackets. A minimum of two fasteners shall be installed into the bottom chord. The right angle brackets shall be installed throughout the portion of the gable end where the gable end wall height is greater than 3 feet at the spacing specified in Table C104.5.1. Connection to the wall below shall be by one of the methods listed below:

1. For a wood frame wall below, a minimum of two fasteners shall be installed. The fasteners shall be of the same diameter and style specified by the bracket manufacturer and sufficient length to extend through the double top plate of the wall below.
2. For a concrete or masonry wall below without a sill plate, the type and number of fasteners into the wall shall be consistent with the bracket manufacturer's specifications for fasteners installed in concrete or masonry.
3. For a concrete or masonry wall below with a 2x sill plate, the fasteners into the wall below shall be of the diameter and style specified by the bracket manufacturer for concrete or masonry connections; but, long enough to pass through the wood sill plate and provide the required embedment into the concrete or masonry below. Alternatively, the bracket can be anchored to the sill plate using 4 each 1-1/2 inch long fasteners of the same type as specified by the bracket manufacturer for wood connections, provided that the sill plate is anchored to the wall on each side of the bracket by a 1/4-inch diameter masonry screw with a 2-3/4 inches of embedment into the concrete or masonry wall. A 1/4 inch washer shall be placed under the heads of the masonry screws.

TABLE C104.5.1
SPACING OF RIGHT ANGLE BRACKETS

<u>Exposure</u>	<u>Maximum 3-Sec. Gust</u>	<u>Spacing of</u>
<u>Category</u>	<u>Wind Speed – V</u>	<u>Right Angle</u>
	<u>Mph</u>	<u>Brackets^a</u>
<u>C</u>	<u>110</u>	<u>38-inches</u>
<u>C</u>	<u>120</u>	<u>32-inches</u>
<u>C</u>	<u>130</u>	<u>28-inches</u>
<u>C</u>	<u>140</u>	<u>24-inches</u>
<u>C</u>	<u>150</u>	<u>20-inches</u>
<u>B</u>	<u>110</u>	<u>48-inches</u>
<u>B</u>	<u>120</u>	<u>40-inches</u>
<u>B</u>	<u>130</u>	<u>36-inches</u>
<u>B</u>	<u>140</u>	<u>30-inches</u>
<u>B</u>	<u>150</u>	<u>26-inches</u>

a. See Section C102 for definition of right angle bracket.

C104.5.2 Conventionally framed gable end wall. Each stud in a conventionally framed gable end wall, throughout the length of the gable end wall where the wall height is greater than 3 feet, shall be attached to the bottom or sill plate using a stud to plate connector with minimum uplift capacity of 175 pounds. The bottom or sill plate shall then be connected to the wall below using one of the methods listed below:

1. For a wood frame wall below, the sill or bottom plate shall be connected to the top plate of the wall below using 1/4 inch diameter lag bolt fasteners of sufficient length to penetrate the bottom plate of the upper gable end wall and extend through the bottom top plate of the wall below. A washer sized for the diameter of the lag bolt shall be placed under the head of each lag bolt. The fasteners shall be installed at the spacing indicated in Table C104.5.2.
2. For a concrete or masonry wall below, the sill or bottom plate shall be connected to the concrete or masonry wall below using 1/4 inch diameter concrete or masonry screws of sufficient length to provide 2-3/4 inches of embedment into the top of the concrete or masonry wall. A washer sized for the diameter of the lag bolt shall be placed under the head of each lag bolt. The fasteners shall be installed at the spacing indicated in Table C104.5.2.

TABLE C104.5.2
SPACING OF LAG OR MASONRY SCREWS USED TO
CONNECT SILL PLATE OF GABLE END WALL TO TOP OF THE WALL BELOW

Exposure Category	Maximum 3-Sec. Gust Wind Speed - V mph	Spacing of Lag Screws or Masonry Screws
C	110	19-inches
C	120	16-inches
C	130	14-inches
C	140	14-inches
C	150	10-inches
B	110	24-inches
B	120	20-inches
B	130	18-inches
B	140	15-inches
B	150	13-inches

Reason: This proposal, along with a similar proposal, is requesting the creation of a new set of Appendix chapters that are intended to provide guidance for retrofitting existing structures to strengthen their resistance to wind forces. These new proposed chapters are similar in scope to Appendix A which addresses seismic retrofits for existing buildings. We anticipate that, over time, additional retrofit methods will be provided in this Appendix chapter. These retrofits are voluntary, and as such may or may not meet the requirements of new construction. However, these voluntary measures will serve to better protect the public and reduce damage from high wind events.

The purpose of the proposed addition is to provide prescriptive means for retrofitting gable ends to resist high winds. This code addition will facilitate the retrofitting of gable ends without requiring site specific engineering for common applications, thus removing some of the obstacles that might impede this important retrofit in hurricane prone regions.

Reason for adding provisions for retrofitting gable ends

Gable end failures are one of the most common types of structural failures observed in hurricanes. They have been documented in most major hurricanes and in many weaker hurricanes.

The proposed code addition is intended to be a prescriptive approach to reduce retrofitting costs, facilitate retrofitting, minimize the need for engineering, and facilitate code review and inspection. The addition will provide standardized off the shelf methods that can be readily approved and easily inspected by building department personnel. Building departments can thus become creditable third party resources for authenticating retrofitting just as they do for other structural issues of buildings.

It should be recognized that almost no attempt to retrofit will actually weaken or compromise a building or subject surrounding buildings to risk, on the contrary all will benefit. The retrofitting is voluntary.

Reason for adding retrofit measures to the code

Because most America's buildings located in hurricane prone regions were not built to today's building codes standards, there is significant value added to the code if the retrofitting of buildings could be facilitated by the provision of prescriptive means. This would inherently reduce the cost of retrofitting. The need for structural retrofitting has been highlighted in the recent spate of hurricanes and the insurance crises that has developed in the coastal high wind areas of a number of states because of older buildings that do not meet current building code structural requirements. Clearly, it is in the public's health, welfare, and safety to facilitate retrofitting. Given the importance of retrofitting to the public, retrofitting of buildings should be encouraged and facilitated by removing as many impediments as possible. The code can actually facilitate and encourage retrofitting by providing prescriptive means. Such methods should encourage, facilitate, and reduce the cost of improving America's building stock.

Reason for location in code

The preferred approach is to add an appendix chapter that deals specifically with retrofitting of a voluntary nature. The advantage of this approach is that it easily allows for additional retrofit measures to be added without confusing code users by gable end retrofit being in the repair section and then changing its location to a separate chapter in a subsequent edition when more retrofit measures are added. Further by grouping retrofit measures into a separate chapter users will find them and perhaps even use the chapter as a catalog of potential retrofit measures. Additionally, grouping voluntary measures into a separate chapter, a chapter separate from mandatory measures, will make code administration less prone to confusion.

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

ICCFILENAME: STAFFORD-EB2-APP C-2.DOC

Public Hearing Results

Committee Action:

Approved as Submitted

Committee Reason: This proposal introduces guidelines for gable retrofits as an appendix. While no IEBC provision will send you to this appendix, jurisdictions will have it available to make that decision. This chapter addresses a recognized hazard and it has been utilized for a number of years in Florida's hurricane regions.

Assembly Action:

None

Individual Consideration Agenda

These items are on the agenda for individual consideration because public comments were submitted.

Public Comment 1:

Gary Ehrlich, representing the National Association of Home Builders, requests Approval as Modified.

Modify the proposal as follows:

C101.1 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 the building's 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.~~

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 wall truss frame or a conventionally framed gable end rafter system. The retrofits are appropriate for wall studs or webs spaced 24 inches on center maximum and oriented with the wide face either parallel to or perpendicular to the surface of the gable end surface. Gable ends to be strengthened shall be permitted to be retrofitted using methods prescribed by this chapter.

RETROFIT STUD. A lumber member used to structurally supplement an existing gable end wall stud or gable end frame web.

RIGHT ANGLE BRACKET. ~~A galvanized metal right angle bracket listed by the manufacturer for the material into which they will be attached, masonry (concrete or CMU) or wood.~~

TRUSS GABLE END FRAME. ~~An engineered factory made truss or site-fabricated frame, installed as a complete assembly, built truss that incorporates factory installed or field installed vertical webs studs with their faces parallel to the plane of the frame truss~~

C103.3. Material specifications for retrofits. Materials for retrofitting gable end walls shall comply with Table C103.3 Sections C103.3.1 through C103.6

**TABLE C103.3
MATERIAL SPECIFICATIONS FOR RETROFITS^a**

<u>Component</u>	<u>Minimum Size or Thickness</u>	<u>Minimum Material Grade</u>	<u>Minimum Capacity</u>
<u>Anchor blocks, compression blocks, and horizontal braces</u>	<u>2x4 nominal lumber</u>	<u>#2 Spruce-Pine-Fir or better</u>	<u>N/A</u>
<u>Nail plates</u>	<u>20 gauge thickness 8d minimum nail holes</u>	<u>Galvanized sheet steel</u>	<u>N/A</u>
<u>Retrofit studs</u>	<u>2x4 nominal lumber</u>	<u>#2 Spruce-Pine-Fir or better</u>	<u>N/A</u>
<u>Gusset angle</u>	<u>14 gage thickness</u>	<u>Galvanized sheet steel</u>	<u>350 pounds uplift and lateral load</u>
<u>Stud-to-plate connector</u>	<u>20 gage thickness</u>	<u>Galvanized sheet steel</u>	<u>500 pounds uplift</u>
<u>Metal plate connectors, straps, and anchors</u>	<u>20 gage thickness</u>	<u>Galvanized sheet steel</u>	

N/A = Not applicable

a. Metal plate connectors, nail plates, stud-to-plate connectors, straps and anchors shall be products *approved* for connecting wood-to-wood or wood-to-concrete as appropriate.

~~**C103.3.1 Anchor blocks, compression blocks, and horizontal braces.** Anchor blocks, compression blocks, and horizontal braces shall be lumber nominally 2 inch by at least 4 inch wide.~~

~~**C103.3.2 Nail plate.** Nail plates shall be of minimum 20 gauge thickness.~~

~~**C103.3.3 Retrofit stud.** Retrofit studs shall be made of nominal 2-inch lumber.~~

~~**C103.3.4 Right angle bracket.** Right angle brackets shall have a minimum capacity of 350 for uplift and lateral load conditions.~~

~~**C103.3.5 Stud-to-plate connector.** Stud-to-plate connectors shall have a minimum capacity of 500 pounds for uplift.~~

~~C103.3.6 Truss gable end.~~ Gable end trusses shall be spaced no greater than 24 inches on center.

~~C103.4 Metal plate connectors, straps and anchors.~~ Metal plate connectors, plates, straps and anchors shall be a product approved for connecting wood to wood or wood to concrete as appropriate. Straps and nail plates shall be manufactured from galvanized steel with a minimum thickness of 20 gauge. Nail plates shall have holes sized for a minimum of 8d nails.

~~C103.6 Fasteners.~~ Fasteners shall meet the requirements of Table C103.6, Sections C103.6.1 and Section C103.6.2, and shall be permitted to be screws or nails meeting the minimum length requirement shown in the figures and specified in the tables of this Appendix. Fastener spacing shall meet the requirements of Section C103.6.3.

**TABLE C103.6
NAIL AND SCREW REQUIREMENTS**

Fastener Type	Minimum Shank Diameter	Minimum Head Diameter	Minimum Fastener Length
#8 screws		0.28 inches	1-1/4 inches
8d common nails	0.131 inches	0.28 inches	2-1/2 inches
10d common nails	0.148 inches	0.28 inches	3 inches

~~C103.6.1 Screws.~~ Screws shall be a minimum #8 size with head diameters no less than 0.28 inches. Unless otherwise indicated in this Appendix, screw sizes and lengths shall be no less than indicated in accordance with the Figures and in Tables C103.6. Permissible screws include deck screws and wood screws. Screws shall have at least 1 inch of thread. Fine threaded screws or drywall screws shall not be permitted. Screws shall be chosen with the appropriate diameter such that the shank adjacent to the head fits through the hole in the strap.

~~C103.6.2 Nails.~~ Unless otherwise indicated in this Appendix, nail sizes and lengths shall be in accordance with Table C103.6, the provisions or drawings, where fastener lengths are indicated in Figures and Tables, as 1 1/4 inches, 8d common nails with shank diameter 0.131 inches and head diameters no less than 0.28 inches shall be permitted. Unless otherwise indicated in the provisions or drawings, where fasteners lengths are indicated in Figures and Tables, as 3 inches, 10d common nails with shank diameter of 0.148 inches and head diameters no less than 0.28 inches shall be permitted.

~~C104.2 Horizontal braces.~~ Horizontal braces shall be installed ~~approximately~~ perpendicular to the roof and ceiling framing members at the location of each existing gable end stud greater than 3 feet in length. Unless it is adjacent to an omitted horizontal brace location, horizontal braces shall be minimum 2x4 dimensional lumber as defined in Section C103.3. A single horizontal brace is required at the top and bottom of each gable end stud for Retrofit Configuration A, B, or C. Two and two horizontal braces are required at the top and bottom of each gable end stud for Retrofit Configuration D. Maximum heights of gable end wall studs and associated retrofit studs for each Retrofit Configuration shall not exceed the values listed in Table C104.2. Horizontal braces shall be oriented with their broad faces across the roof or ceiling framing members, be fastened to a minimum of three framing members, and extend at least 6 feet measured perpendicularly from the gable end plus 2-1/2 inches beyond the last top chord or bottom chord member (rafter or ceiling joist) from the gable end as shown in Figure C104.2(1), Figure C104.2(2), Figure C104.2(3), and Figure C104.2(4).

~~C104.2.1 Existing gable end studs.~~ If the spacing of existing vertical gable end studs ~~in conventionally framed or the truss gable ends~~ is greater than 24 inches, a new stud and corresponding horizontal braces shall be installed such that the maximum spacing between existing and added studs shall be no greater than 24 inches. Additional gable end wall studs shall not be required at locations where their length would be 3 feet or less. Each end of each required new stud shall be attached to the existing roof framing members (truss top chord or rafter and truss bottom chord or ceiling joist) using a minimum of two 3 inch toenail fasteners (#8 wood screws or 10d nails) and a metal connector with minimum uplift capacity of 175 pounds, or nail plates with a minimum of four 1-1/4 inch long fasteners (#8 wood screws or 8d nails).

~~C104.2.2 Main method of installation.~~ Each horizontal brace shall be fastened to each existing roof or ceiling member that it crosses using three 3-inch long fasteners (#8 wood screws or 10d nails) as indicated in Figure C104.2(1) and Figure C104.2(3) for trusses and Figure C104.2(2) and Figure C104.2(4) for conventionally framed gable end walls. Alternative methods for providing horizontal bracing of the gable end studs as provided in Sections C104.2.3 through C104.2.9 shall be allowed ~~in lieu of this primary installation method.~~

~~C104.2.3 Omitted horizontal brace.~~ Where ~~impediments, other permanently attached obstacles or~~ conditions exist that prevent installation in accordance with Section C104.2.2 horizontal braces shall be permitted to may be omitted for height limitations corresponding to Retrofit Configurations A and B as defined in Table C104.2 provided installation is as indicated in Figure C104.2.3 and provided all of the following conditions are met. This method is not allowed for Retrofit Configurations C or D.

1. (No changes)
2. Horizontal braces adjacent to the omitted horizontal brace shall be 2x6 lumber, shall butt against the existing studs, and shall be fastened to each existing roof or ceiling member ~~that it crosses~~ using three 3-inch long fasteners (#8 wood screws or 10d nails). For Retrofit Configuration B, four fasteners shall be required on at least one of the connections between the horizontal brace and the existing roof and ceiling framing members. Fasteners shall be spaced a minimum of 3/4" from the edges of the horizontal braces and a minimum of 1-3/4" from adjacent fasteners.
3. Where the existing studs on each side of an omitted horizontal brace have their broad face perpendicular to the gable end wall, the retrofit studs at those locations and the retrofit stud at the omitted horizontal brace locations shall extend ~~be sized such that they protrude~~ a minimum of 3-1/2 inches beyond the interior edge of the existing studs for both Retrofit Configurations A and B. The edges of the three retrofit studs facing towards the interior of the attic shall be aligned such that they are the same distance from the gable end wall.
4. (No changes)
5. (No changes)
6. A strong-back made of minimum of 2x8 lumber shall be placed parallel to the gable end and shall be located on and span between horizontal braces on the two sides of the omitted horizontal brace and shall extend beyond each horizontal braces by a minimum of 2-1/2 inches. The strong back shall be butted to the three retrofit studs. The strong-back shall be attached to each of the horizontal braces on which it rests with five ~~5~~ 3 inch long fasteners (#8 screws or 8d nails). The These fasteners shall have ~~be spaced~~ a minimum of 3/4 inch from any edge, distance of lumber and shall be spaced a minimum of 2-1/2 inch spacing between fasteners from each other. Additional compression blocks shall not be required at locations where a strong-back butts against a retrofit stud.
7. (No changes)

8. (No changes)
9. (No changes)

C104.2.4 Omitted horizontal brace and retrofit stud. Where ~~impediments, other permanently attached obstacles or~~ conditions exist that prevent installation in accordance with Section C104.2.2 or Section C104.2.3 ~~by not permitting installation of horizontal braces,~~ then retrofit studs and horizontal braces shall be permitted to be omitted from those locations by installation of ladder assemblies for Retrofit Configurations A and B as defined in Table C104.2 provided all of the following conditions are met. This method is not allowed for Retrofit Configurations C or D.

1. (No changes)
2. (No changes)
3. (No changes)
4. Horizontal braces adjacent to the omitted horizontal brace shall be 2x6 lumber and be fastened to each existing roof or ceiling member crossed using three 3-inch long fasteners (#8 wood screws or 10d nails) as indicated in Figure C104.2(1) and Figure C104.2(3) for gable end frames ~~trusses~~ and Figure C104.2(2) and Figure C104.2(4) for conventionally framed gable end walls. For Retrofit Configuration B, four ~~4~~ fasteners shall be required on at least one of the connections between the horizontal brace and the existing roof and ceiling framing members.
5. Ladder rungs ~~shall~~ be provided across the location of the omitted retrofit studs as indicated in Figure C104.2.4(1) for gable end frame ~~trusses~~ and Figure C104.2.4(2) for conventionally framed gable end walls.
6. Ladder rungs shall be ~~made of a~~ minimum 2x4 lumber oriented with their broad face horizontal and spaced a maximum of 16 inches on center vertically.
7. Where ladder rungs cross wall framing structural members such as the existing stud at the omitted retrofit stud location or gable end vent framing they shall be connected to the wall framing members ~~each other~~ with a metal connector with a minimum capacity of 175 pounds in the direction perpendicular to the gable end wall.
8. (No changes)

C104.2.5 Short horizontal brace. Where ~~impediments, other permanently attached obstacles or~~ conditions exist that prevent installation in accordance with Sections C104.2.2, C104.2.3, or C104.2.4 ~~by not permitting extension of horizontal braces across the existing framing members such that they can be fastened to a minimum of three framing members and extend at least 6 feet from the gable end wall plus 2-1/2 inches beyond the last roof or ceiling framing member,~~ the horizontal braces shall be permitted to ~~may~~ be shortened provided installation is as indicated in Figure C104.2.5 and ~~provided that~~ all of the following conditions are met.

1. The horizontal brace shall be installed across a minimum of two framing spaces, extend a minimum of 4 feet from the gable end wall plus 2-1/2 inches beyond the farthest last roof or ceiling framing member from the gable end, and be fastened to each existing framing member with three 3-inch long fasteners (#8 wood screws or 10d nails),
2. (No changes)
3. (No changes)
4. (No changes)

C104.2.6 Installation of horizontal braces onto webs or vertical members of trusses. Where existing conditions preclude installation of horizontal braces on truss top or bottom chords they shall be permitted to be installed on truss webs ~~or vertical members of trusses~~ provided all of the following conditions are met.

1. Horizontal braces shall be installed as close to the top or bottom chords as practical without altering the truss or any of its components and not more than three times the depth of the truss member to which it would ordinarily be attached.
2. A racking block, comprised of an anchor block meeting the definition of anchor block of Section C102 or comprised of minimum 15/32 inch plywood or 7/16 inch OSB, shall be fastened to the horizontal brace in the second framing space from the gable end wall. The racking block shall extend towards the ~~diaphragm (roof or ceiling diaphragm as appropriate)~~ so that the edge of the racking block closest to the diaphragm is within 1/2 the depth of the existing framing member from the diaphragm surface. The racking block ~~They~~ shall be attached to horizontal braces using six fasteners (#8 wood screws or 10d nails) of sufficient length to provide 1-1/2 inches of penetration into the horizontal brace.
3. Racking blocks ~~shall be permitted to can~~ be fastened to any face or edge of horizontal braces between each web or truss vertical posts to which a horizontal brace is attached. Racking blocks ~~shall be permitted to can~~ be on alternate sides of horizontal braces. Racking blocks shall be installed tightly between the lumber of truss members or truss plates such that the gap at either end shall be a maximum of 1/8 inch.

C104.2.7 Alternative method of installation of horizontal braces at truss ridges. Where conditions exist that ~~impediments such as truss plates or access for installation of fasteners~~ limits or restricts installation of horizontal braces near the peak of the roof, ridge ties ~~shall may~~ be added to provide support for the required horizontal brace. The top of added ridge tie members shall be installed a maximum of 12 inches ~~16 inches~~ below the existing ridge line or 4 inches below impediments. ~~The added ridge tie members shall be installed across a minimum of three bays, but no less than 6 feet from the gable end wall plus 2-1/2 inches beyond the last roof or ceiling framing member to permit fastening of the horizontal brace.~~ A minimum of a 2x4 nominal member shall be used for each ridge tie and fastening shall consist of two 3-inch long wood screws, four 3 inch long 10d nails or two 3-1/2 inch long 16d nails driven through and clinched at each top chord or web member intersected by the ridge tie as illustrated in Figure C104.2.7.

C104.2.8 Interrupted horizontal braces. Where ~~impediments, other permanently attached obstacles or~~ conditions exist that prevent installation of horizontal braces in accordance with Section C104.2.2 ~~by preventing the installation of a single continuous horizontal braces~~ then horizontal braces shall be permitted to be interrupted using the methods shown in Figure C104.2.8(1), Figure C104.2.8(2), and Figure C104.2.8(3). For interruptions that occur in the attic framing space closest to the gable end, nine 3 inch fasteners shall be used to connect each section of the interrupted horizontal braces. For interruptions that occur in the second attic space from the gable end, six 3 inch fasteners shall be used to connect each section of the interrupted horizontal braces. For interruptions that occur in the attic framing space farthest from the gable end, three 3 inch fasteners shall be used to connect each section of the interrupted horizontal braces. Horizontal braces shall be continued far enough to allow connections to three existing roof framing members as shown in Figure C104.2.8(1), Figure C104.2.8(2), or Figure C104.2.8(3). Fasteners shall be spaced in accordance with Section C103.6.3. ~~Lumber members used to form H~~ horizontal braces shall be the same width and depth as required for an uninterrupted member.

C104.2.9 Piggyback trusses Gable End Frames. Piggyback trusses gable end frames (trusses gable end frames composed built in of two members sections one above the other) shall be permitted to be retrofitted if either of the following cases is true.

1. The existing studs in both the upper ~~truss~~ gable end frame and the lower ~~gable end frame~~ truss to which wall sheathing, panel siding, or other wall ~~covering~~ facade are attached are sufficiently in line that retrofit studs can be installed and connections made between the two with retrofit stud(s).
2. The ~~same as condition 1 except the existing studs in the upper truss frame~~ are not sufficiently in line with ~~the studs in the frame~~ ones below and the existing studs in the upper ~~frame~~ truss are 3 feet or shorter.

For ~~Condition 1~~ both the lower stud and the upper stud shall be retrofitted using the methods of Section C104.2. For ~~Condition 2~~ the retrofit stud shall be connected to the lower studs using the methods of Section C104.2 and be continuous from the bottom horizontal brace to the top horizontal brace. No connection is required between the retrofit stud and the upper stud. In both conditions the bottom chord of the piggyback truss section shall be fastened to each retrofit stud using a connector with minimum axial capacity of 175 pounds.

C104.3 Retrofit studs. Retrofit studs shall be installed in accordance with Section C104.3.1 ~~and~~ using one of the five methods of Sections C104.3.2, through C104.3.6 and as shown in Figure C104.3. For the Retrofit Configuration ~~obtained~~ derived from Table C104.2 the size of retrofit studs shall be as indicated in Table C104.4.1 or Table C104.4.2. Retrofit studs shall extend from the top of the lower horizontal brace to the bottom of the upper horizontal brace except that a maximum gap of 1/8 inch is allowed at the bottom and 1/2 inch at the top. Where wall sheathing, panel siding, or other wall facade is fastened to a conventionally framed gable end studs not manufactured into a truss, i.e. are field installed, retrofit studs shall be applied to ~~these field installed studs~~ in accordance with Section C104.2.1.

FIGURE C104.2.3 METHOD OF INSTALLING RETROFIT STUDS

C104.3.2 Method #1: Face to edge or face to face method. Retrofit studs shall be installed immediately adjacent to existing ~~(Section C104.2)~~ gable end wall studs as indicated in Figure C104.3(a). The retrofit studs shall overlap the edge or side of the existing stud by a minimum of 1-1/4 inches. Fasteners shall be installed as specified in Section C104.3.1.

C104.3.4 Method #3: Butted retrofit stud method. Provided that all of the following fastening conditions are met retrofit studs shall be permitted to be butted by their edge ~~or face~~ to existing studs with the addition of nail plates as indicated in Figure C104.3(c) and Figure C104.3.4.

1. The narrow 1-1/2 inch edge of retrofit studs shall be installed against the narrow 1-1/2 inch or the wide broad face of existing studs.
2. A minimum of two nail plates shall be used.
3. Fasteners used to secure nail plates to studs shall be a minimum 1-1/4 inch long (#8 wood screws or 8d nails).
4. Fasteners placed in nail plates shall ~~have~~ be a minimum end distance of 2-1/2 inches ~~for both studs and along the length of lumber. A fastener shall be placed in nail plates a maximum end distance of 6 inches from the ends of the shorter stud.~~
5. Fasteners shall ~~have~~ be placed a minimum of a 1/2 inch edge distance from the edges of the studs. Fasteners shall be placed a maximum of 1-1/2 inches from the abutting vertical edges of existing studs and retrofit studs.
6. There shall be at least 3 fasteners through nail plates into all existing and retrofit studs to which ~~the nail plate~~ it is attached.
7. Nail plates with ~~Where there are 3 fasteners through nail plates onto a single existing or retrofit stud then nail plates shall be spaced a maximum of 15 inches on center.~~
8. Nail plates with ~~Where there are more than 3 fasteners through nail plates onto a single existing or retrofit stud then nail plates shall be spaced a maximum of 20 inches on center.~~
9. ~~In line~~ Fasteners used to secure nail plates shall be spaced vertically a minimum of 1-1/2 inches on center. Staggered fasteners used to secure nail plates shall be spaced horizontally a minimum of 1/2 inches.

C104.3.5 Method #4: Offset retrofit stud method. ~~Where retrofit studs are placed as indicated in Figure C104.3(d) R~~retrofit studs shall be permitted to be offset from existing studs by use of nail plates as shown in Figure C104.3(d) such that the vertical corner of a retrofit stud shall align with ~~be placed at the vertical corner of an existing stud as indicated in Figure C104.3(d) and Figure C104.3.4, and provided the fastening conditions of Section C104.3.4 shall be~~ are met.

C104.4 Connection between horizontal braces and retrofit studs. Connections between horizontal braces and retrofit studs shall comply with Section C104.4.1 or Section C104.4.2. Each retrofit stud shall be connected to the top and bottom horizontal brace members with a minimum ~~of a~~ 20 gauge 1-1/4 inch wide flat or coil metal strap with pre-punched holes for fasteners. Straps shall be fastened with 1-1/4 inch long fasteners (#8 wood screws or 8d nails) with the number of fasteners as indicated ~~in~~ on Table C104.4.1 and Table C104.4.2. Fasteners shall be no closer to the end of lumber than 2-1/2 inches.

C104.5.1 Truss gable end Gable end frame wall. The bottom chords of the gable end ~~frame~~ wall in a truss gable shall be attached to the wall below using gusset right angles ~~brackets~~. A minimum of two fasteners shall be installed into the bottom chord. The gusset right angles ~~brackets~~ shall be installed throughout the portion of the gable end where the gable end wall height is greater than 3 feet at the spacing specified in Table C104.5.1. Connection to the wall below shall be by one of the methods listed below:

1. For a wood frame wall below, a minimum of two fasteners shall be installed. The fasteners shall be of the same diameter and style specified by the gusset angle bracket manufacturer and sufficient length to extend through the double top plate of the wall below.
2. For a concrete or masonry wall below without a sill plate, the type and number of fasteners into the wall shall be consistent with the gusset angle bracket manufacturer's specifications for fasteners installed in concrete or masonry.
3. For a concrete or masonry wall below with a 2x sill plate, the fasteners into the wall below shall be of the diameter and style specified by the gusset angle bracket manufacturer for concrete or masonry connections; but, long enough to pass through the wood sill plate and provide the required embedment into the concrete or masonry below. Alternatively, the gusset angle bracket can be anchored to the sill plate using 4 each 1-1/2 inch long fasteners of the same type as specified by the gusset angle bracket manufacturer for wood connections, provided that the sill plate is anchored to the wall on each side of the gusset angle bracket by a 1/4-inch diameter masonry screw with a 2-3/4 inches of embedment into the concrete or masonry wall. A 1/4 inch washer shall be placed under the heads of the masonry screws.

(Portions of the proposal not shown remain unchanged)

Commenter's Reason: The purpose of this public comment is to clarify the provisions for gable end retrofits. The original language is frequently repetitive, unclear or contains provisions more appropriate for a commentary than in code text. The proposed revisions here clarify and simplify the gable end retrofit provisions, making them easier for builders and code officials to interpret and use.

Public Comment 2:

Name: Gary J. Ehrlich, PE, representing the National Association of Home Builders (NAHB), requests **Approval as Modified:**

Modify the proposal as follows:

1. Add Figures C104.2.4(1), C104.2.4(2), C104.2.5, and C104.3.8:

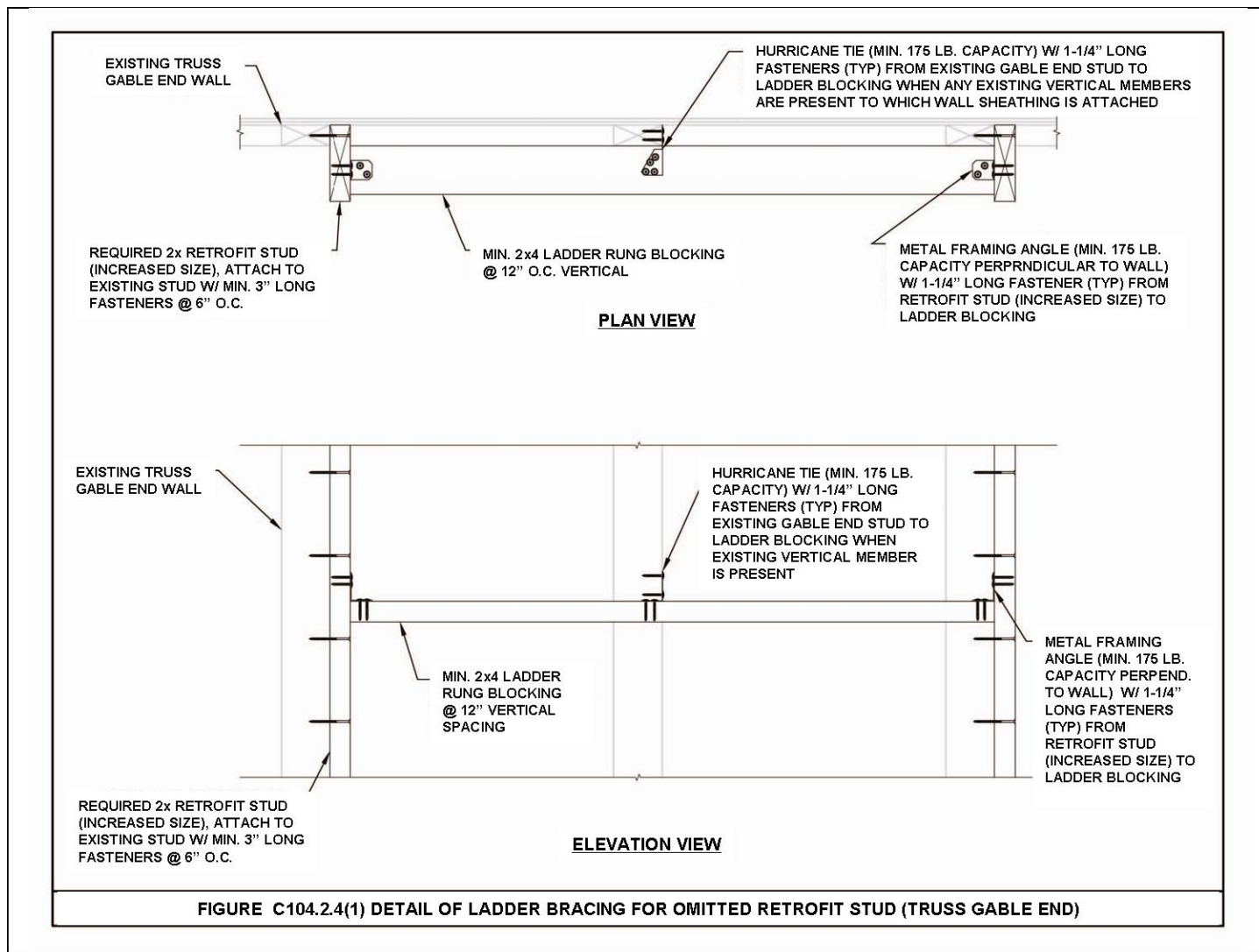
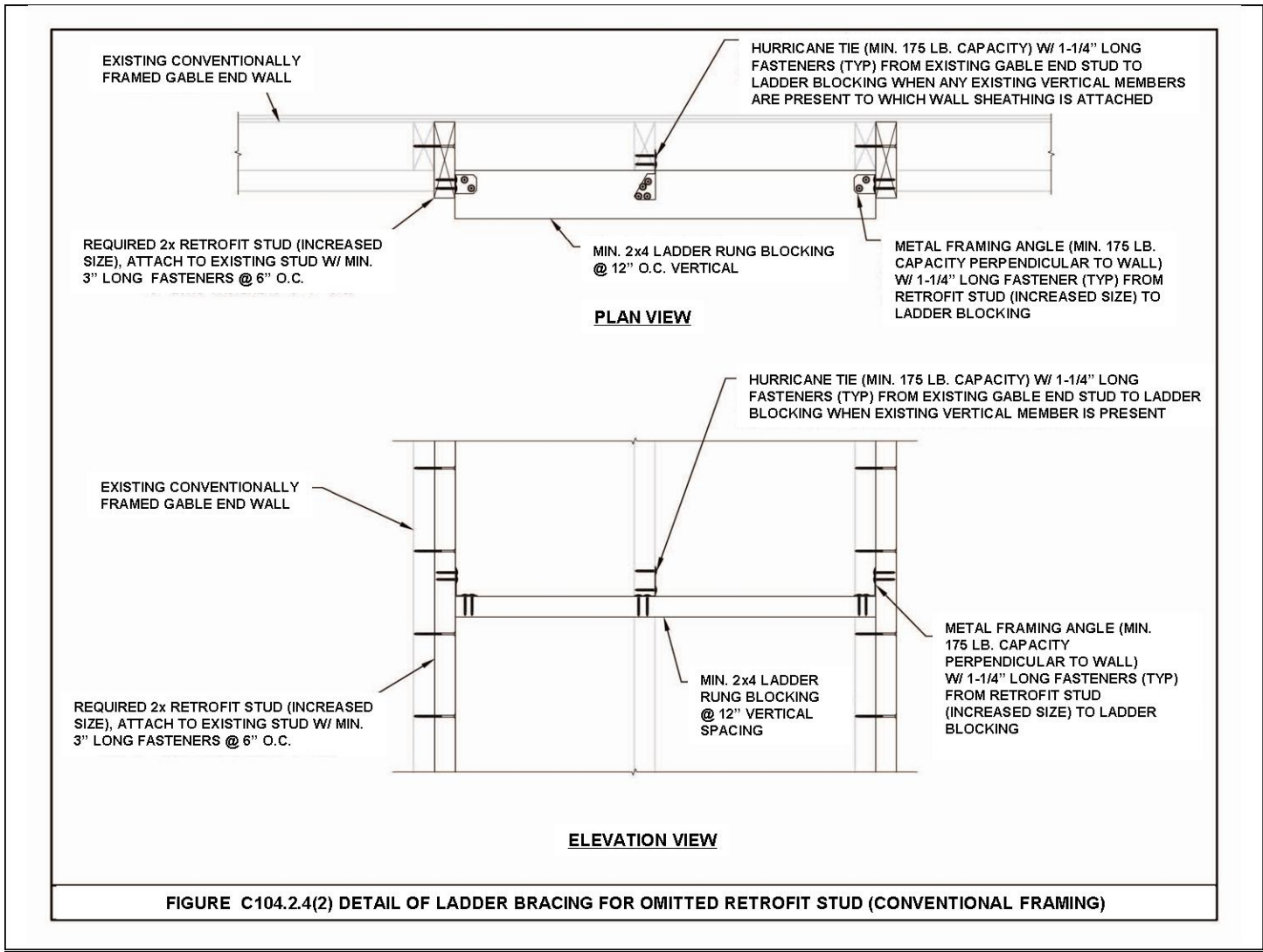


FIGURE C104.2.4(1)
LADDER BRACING FOR OMITTED RETROFIT STUD (GABLE END FRAME)



**FIGURE C104.2.4(2)
LADDER BRACING FOR OMITTED RETROFIT STUD (CONVENTIONALLY FRAMED GABLE END)**

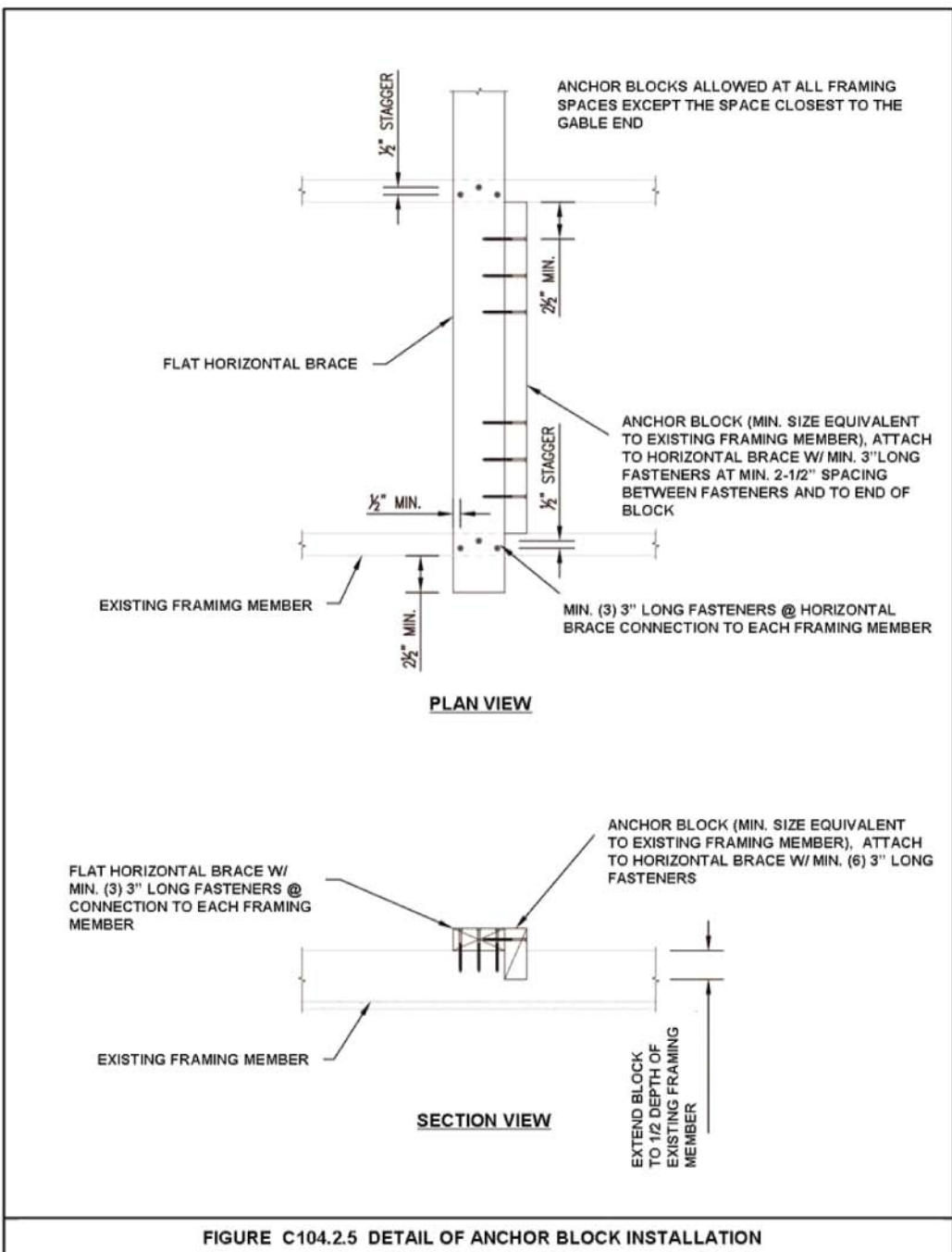


FIGURE C104.2.5
ANCHOR BLOCK INSTALLATION

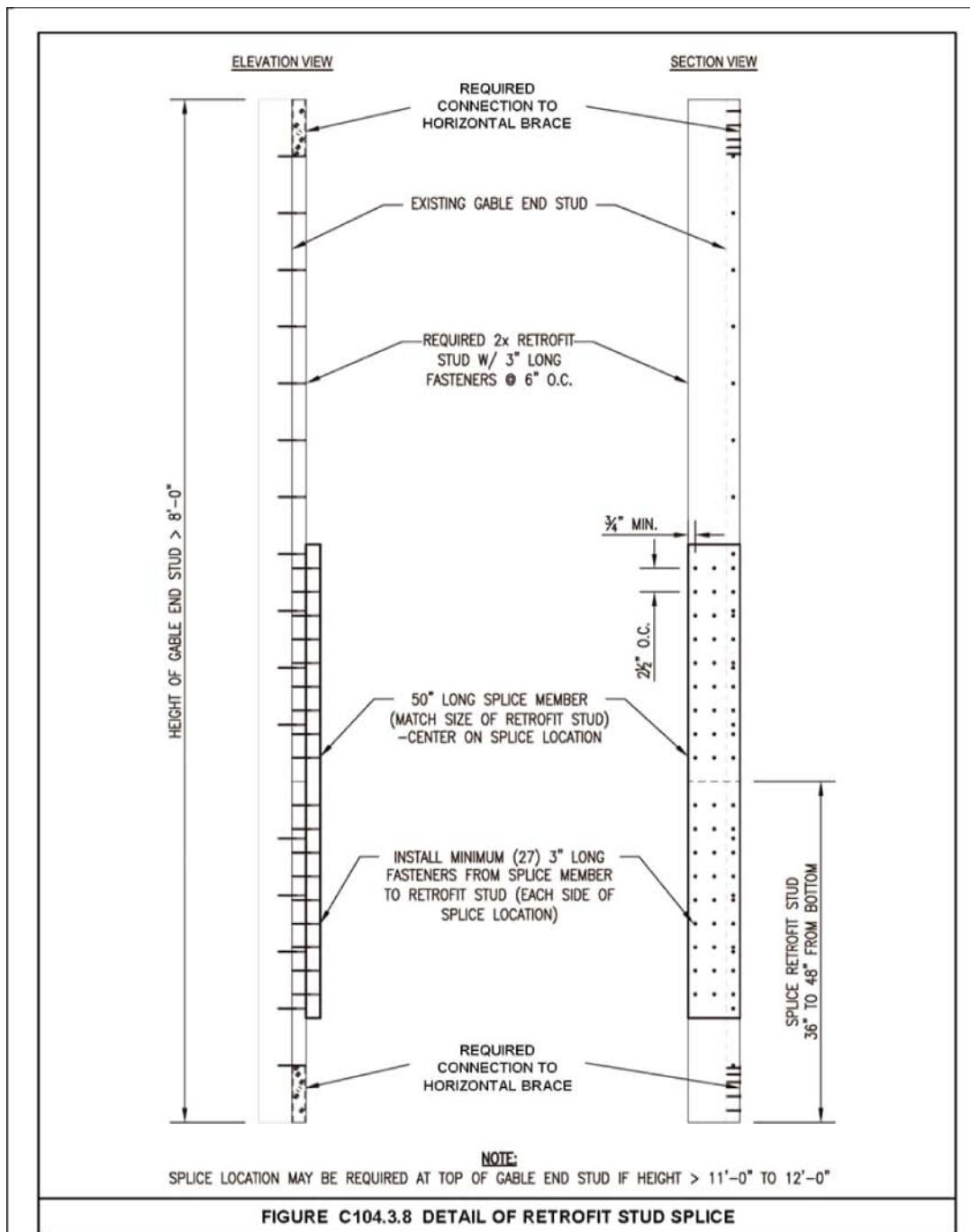


FIGURE C104.3.8
RETROFIT STUD SPLICES

2. Replace Tables C104.4.1, C104.4.2, and C104.5.1 with the following:

**TABLE C104.4.1
ELEMENT SIZING AND SPACING FOR L-BENT RETROFIT METHOD**

Retrofit Elements	Retrofit Configuration			
	A	B	C	D
Minimum size and number of Horizontal Braces	2x4	2x4	2x4	2 each 2x4
Minimum size and number of Retrofit Studs	2x4	2x6	2x8	2 each 2x8
Minimum number of fasteners connecting each end of straps to Retrofit Studs or to Horizontal Braces #8 screws or 10d nails 1-1/4" long	6	9	12	8 on each strap
Minimum number of fasteners to connect Compression Blocks to Horizontal Braces #8 screws or 10d nails 3" long	6	8	10	12

For SI: 1 Inch = 25.4mm, 1 Foot = 304.8mm

**TABLE C104.4.2
ELEMENT SIZING AND SPACING FOR U-BENT RETROFIT METHOD**

Retrofit Elements	Retrofit Configuration			
	A	B	C	D
Minimum size and number of Horizontal Braces	2x4	2x4	2x4	2 each 2x4
Minimum size and number of Retrofit Studs	2x4	2x6	2x8	2 each 2x8
Minimum number of fasteners connecting Straps to each edge of Horizontal Braces #8 screws or 10d nails 1-1/4" long	6	7	7	6 on each side of strap

For SI: 1 Inch = 25.4mm, 1 Foot = 304.8mm

**TABLE C104.5.1
SPACING OF GUSSET ANGLES**

Exposure Category	Basic Wind Speed (mph)	Spacing of Gusset Angles (inches)
C	110	38
C	120	32
C	130	28
C	140	24
C	150	20
B	110	48
B	120	40
B	130	36
B	140	30
B	150	26

(Portions of the proposal not shown remain unchanged)

Commenter's Reason: The purpose of this public comment is two-fold. First the comment adds four figures – Figures C104.2.4(1), C104.2.4(2), C104.2.5, and C104.3.8 -- which were mistakenly omitted from the original proposal. Second, the comment replaces three proposed Tables C104.4.1, C104.4.2, and C104.5.1 with version reformatted for improved clarity. No technical changes have been made to the reformatted Tables.

Public Comment 3:

Gary Ehrlich, representing the National Association of Home Builders, requests Approval as Modified.

Modify the proposal as follows:

C103.6.3.3 Metal connectors for wood to wood connections. Metal connectors for wood to wood connections shall meet the following conditions.

1. Fastener spacing to edge or ends of lumber shall be as dictated by the prefabricated holes in the connectors and the connectors shall be installed in accordance with the manufacturer.
2. Fasteners in 1-1/4 inch wide metal straps that are installed on the narrow 1-1/2 inch broad face of lumber shall be a minimum 1/4 inches from either edge of the lumber. Consistent with Section C103.6.3.1 fasteners shall be permitted ~~to be spaced~~ ~~according to the fastener holes fabricated into the strap.~~
3. Fasteners in metal nail plates shall be spaced a minimum of 1/2 inches ~~perpendicular to across wood~~ grain and a minimum of 1-1/2 inches parallel to ~~wood~~ grain.

C104.3.4 Method #3: Butted retrofit stud method. Provided that all of the following fastening conditions are met retrofit studs shall be permitted to be butted by their edge or face to existing studs with the addition of nail plates as indicated in Figure C104.3(c) and Figure C104.3.4.

1. The narrow 1-1/2 inch edge of retrofit studs shall be installed against the narrow 1-1/2 inch or the wide broad face of existing studs.

Figure C103.6.3 revise the phrase in the third note from the top "Distance across grain minimum 1 inch" to "Distance perpendicular to grain minimum 1 inch"

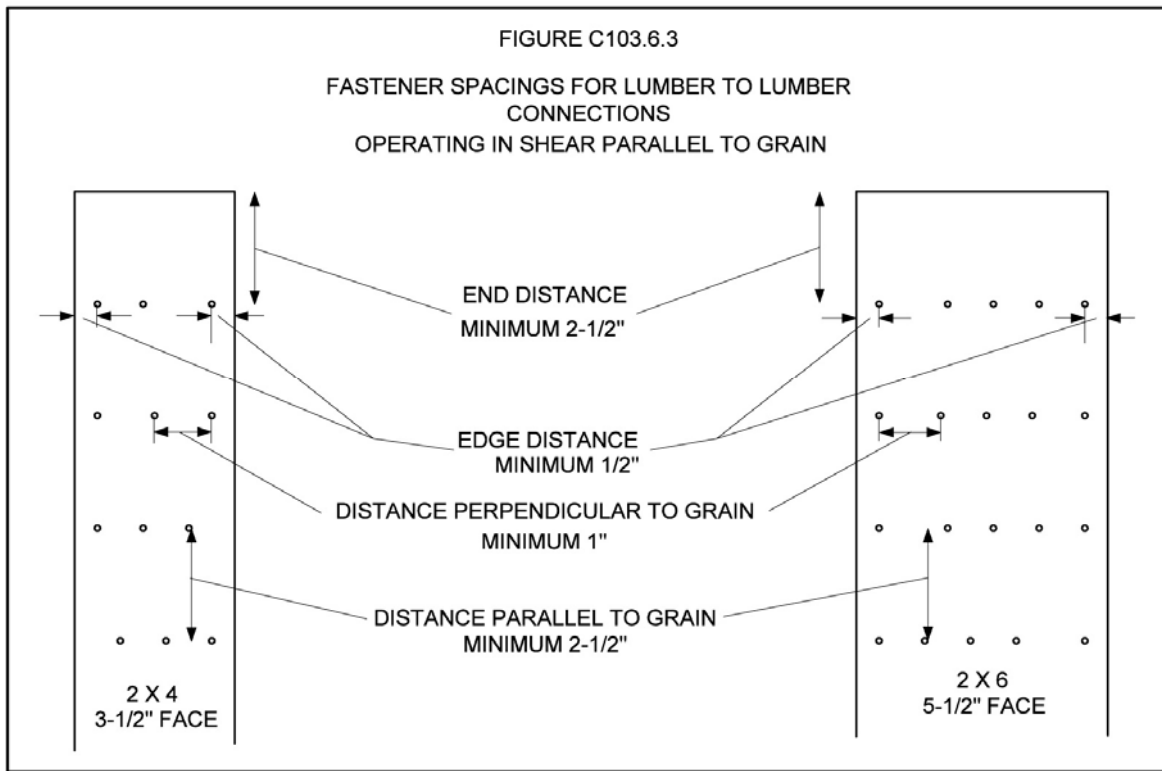


FIGURE C103.6.3
FASTENER SPACINGS FOR LUMBER TO LUMBER CONNECTIONS OPERATING IN SHEAR PARALLEL TO GRAIN

C104.1 General. These prescriptive methods of retrofitting are intended to increase the resistance of existing gable end construction for out-of-plane wind loads resulting from high wind events. The ceiling diaphragm shall be comprised of minimum ½ inch thick gypsum board or wall, minimum nominal 3/8 inch thick wood structural panels, or plaster. An overview isometric drawing of one kind of gable end retrofit to improve wind resistance is shown in Figure C104.1.1.

C104.2 Horizontal braces. Horizontal braces shall be installed approximately perpendicular to the roof and ceiling framing members at the location of each existing gable end stud greater than 3 feet in length. Unless it is adjacent to an omitted horizontal brace location, horizontal braces shall be minimum 2x4 dimensional lumber as defined in Section C103.3. A single horizontal brace is required at the top and bottom of each gable end stud for Retrofit Configuration A, B, or C and two horizontal braces are required for Retrofit Configuration D. Maximum heights of gable end wall studs and associated retrofit studs for each Retrofit Configuration shall not exceed the values listed in Table C104.2. Horizontal braces shall be oriented with their wide broad faces across the roof or ceiling framing members, be fastened to a minimum of three framing members, and extend at least 6 feet measured perpendicularly from the gable end plus 2-1/2 inches beyond the last top chord or bottom chord member (rafter or ceiling joist) from the gable end as shown in Figure C104.2(1), Figure C104.2(2), Figure C104.2(3), and Figure C104.2(4).

C104.2.2 Main method of installation. Each horizontal brace shall be fastened to each existing roof or ceiling member that it crosses using three 3-inch long fasteners (#8 wood screws or 10d nails) as indicated in Figure C104.2(1) and Figure C104.2(3) for trusses and Figure C104.2(2) and Figure C104.2(4) for conventionally framed gable end walls. Alternative methods for providing horizontal bracing of the gable end studs as provided in Sections C104.2.3 through C104.2.9 shall be permitted ~~allowed~~ in lieu of this primary installation method.

C104.2.3 Omitted horizontal brace. Where impediments, other permanently attached obstacles or conditions exist that prevent installation in accordance with Section C104.2.2 horizontal braces may be omitted for height limitations corresponding to Retrofit Configurations A and B as defined in Table C104.2 provided installation is as indicated in Figure C104.2.3 and provided all of the following conditions are met. This method is not permitted ~~allowed~~ for Retrofit Configurations C or D.

1. (No changes)
2. (No changes)
3. Where the existing studs on each side of an omitted horizontal brace have their wide broad face perpendicular to the gable end wall, the retrofit studs at those locations and the retrofit stud at the omitted horizontal brace locations shall be sized such that they protrude a minimum of 3-1/2 inches beyond the interior edge of the existing studs for both Retrofit Configurations A and B. The edges of the three retrofit studs facing towards the interior of the attic shall be aligned such that they are the same distance from the gable end wall.
4. (No changes)
5. Retrofit studs adjacent to the omitted horizontal brace shall be fastened to the horizontal brace using straps in accordance with Table C104.4.1 consistent with the size of the retrofit stud. The method applicable to Table C104.4.2 is not permitted ~~allowed~~.
6. (No changes)
7. (No changes)
8. The use of shortened horizontal braces using the alternative method of Section C104.2.5 is not permitted ~~allowed~~ for horizontal braces adjacent to the omitted horizontal braces.
9. (No changes)

C104.2.4 Omitted horizontal brace and retrofit stud. Where impediments, other permanently attached obstacles or conditions exist that prevent installation in accordance with Section C104.2.2 or Section C104.2.3 by not permitting installation of horizontal braces, then retrofit studs and horizontal braces shall be permitted to be omitted from those locations by installation of ladder assemblies for Retrofit Configurations A and B as defined in Table C104.2 provided all of the following conditions are met. This method is not ~~permitted~~ ~~allowed~~ for Retrofit Configurations C or D.

1. (No changes)
2. (No changes)
3. Where the existing studs on each side of an omitted horizontal brace have their ~~wide~~ ~~bread~~ face parallel to the gable end wall the retrofit studs at those locations and the retrofit stud at the omitted horizontal brace locations shall be 2x6 lumber for Retrofit Configuration A and 2x8 lumber for Retrofit Configuration B.
4. (No changes)
5. (No changes)
6. Ladder rungs shall be made of at a minimum 2x4 lumber oriented with their ~~wide~~ ~~bread~~ face horizontal and spaced a maximum of 16 - inches on center vertically.
7. (No changes)
8. (No changes)

C104.3 Retrofit studs. Retrofit studs shall be installed in accordance with Section C104.3.1 and using one of the five methods of Sections C104.3.2, through C104.3.6 and as shown in Figure C104.3. For the Retrofit Configuration derived from Table C104.2 the size of retrofit studs shall be as indicated in Table C104.4.1 or Table C104.4.2. Retrofit studs shall extend from the top of the lower horizontal brace to the bottom of the upper horizontal brace except that a maximum gap of 1/8 inch is ~~permitted~~ ~~allowed~~ at the bottom and ½ inch at the top. Where wall sheathing, panel siding, or other wall ~~covering~~ ~~face~~ is fastened to a conventionally framed gable end studs not manufactured into a truss, i.e. are field installed, retrofit studs shall be applied to those field installed studs in accordance with Section C104.2.1.

C104.3.4 Method #3: Butted retrofit stud method. Provided that all of the following fastening conditions are met retrofit studs shall be permitted to be butted by their edge or face to existing studs with the addition of nail plates as indicated in Figure C104.3(c) and Figure C104.3.4.

1. The 1-1/2 inch edge of retrofit studs shall be installed against the 1-1/2 inch or the ~~wide~~ ~~bread~~ face of existing studs.
2. (No changes)
3. (No changes)
4. (No changes)
5. (No changes)
6. (No changes)
7. (No changes)
8. (No changes)
9. (No changes)

C104.4.1 L-bent strap method. (No changes).

1. A strap shall be applied to the edges of a retrofit stud nearest the gable end wall and to the face of horizontal braces using at each end of the strap the number of fasteners specified in Table C104.4.1. Straps shall be long enough so that each strap extends sufficient distance onto the vertical face of the retrofit stud that the fastener closest to the ends of the studs is a minimum of 2-1/2 inches from the end of the stud. Straps shall be ~~permitted~~ ~~allowed~~ to be twisted to accommodate the transition between the tops of retrofit studs and horizontal bracings following roof pitches.
2. Compression blocks shall be installed on the horizontal braces directly against either the existing vertical gable end wall stud or the retrofit stud. Figure C104.2(1) (trusses) and Figure C104.2(2) (conventionally framed) show the installation of the compression block against the existing vertical gable end wall stud with the strap from the retrofit stud running beside the compression block. Compression blocks shall be ~~permitted~~ ~~allowed~~ to be placed over straps. Compression blocks shall be fastened to the horizontal braces with at least the minimum number of 3 inch long fasteners (#8 wood screws or 10d nails) specified in Table C104.4.1. End and edge distances for fasteners shall be in accordance with Section C103.6.3.

C104.4.2 U-bent strap method. (No changes)

1. Straps shall be of sufficient length to meet the requirements for the number of fasteners in accordance with Table C104.4.2 and to meet the end distance requirements of Section C103.6.3 shall be shaped around retrofit studs and fastened to the edges of horizontal braces. Straps shall wrap the back edge of the retrofit stud snugly with a maximum gap of ¼ inches. Rounded bends of straps shall be ~~permitted~~ ~~allowed~~. One fastener shall be installed that connects each strap to the side of the associated retrofit stud.
2. (No changes)
3. Straps shall be ~~permitted~~ ~~allowed~~ to be twisted to accommodate the transition between the tops of retrofit studs and horizontal braces that follow the roof pitch.

(Portions of the proposal not shown remain unchanged)

Commenter's Reason: The purpose of this public comment is to make editorial revisions to the text of EB72 to replace certain words with the proper terms used in building codes and standards.

Public Comment 4:

David Bonowitz, SE, representing the National Council of Structural Engineers Associations, Code Advisory Committee, Existing Buildings Subcommittee (NCSEA EBS), requests Disapproval.

Commenter's Reason: NCSEA EBS recommends disapproval of this well-intentioned proposal for the following reasons:

The proposed Appendix would be inconsistent with the body of the IEBC and with other Appendix Chapters because the proposed Appendix does not state its performance objective. Thus, it is unclear whether compliance with Appendix C would satisfy upgrade requirements triggered by alterations, additions, change of occupancy, or repair. In fact, we believe that Appendix C would *not* satisfy all those triggered requirements, but its inclusion in the code, even as voluntary provisions, gives the wrong impression that it is equivalent. Indeed, the IBC Structural Committee's reason suggests that local jurisdictions might want to cite the proposed Appendix as equivalent or "deemed to comply".

As a matter of code development philosophy, including an appendix that is not cited anywhere by the body of the code is a questionable practice that will not serve code officials well and is likely to lead to confusion. Well-intentioned provisions for voluntary work such as those proposed by EB72 are useful to practitioners, but they are better published elsewhere – especially in a format that would allow ample commentary and guidance to contractors and owners.

The proposed Appendix, while intended for 1-2 family dwellings, provides no scope limitations as to building size or occupancy. As written, the proposed provisions could be used for very tall or wide gables as well as gables typical of a house. Further, they could be applied to schools or assisted living facilities without limitation or guidance appropriate to special occupancies.

By limiting the scope of retrofit work to be practical, the proposed provisions might not result in a complete retrofit solution. That might be acceptable if the proposed Appendix was clear about its limited intent, but no such explanations are provided. (Proposed section C101.1 is clear that Appendix C does not match the requirements for *new* construction, but that only confuses the matter, because it suggests incorrectly that Appendix C *does* or *might* match the typically reduced requirements of the IEBC.) An example of rational engineering provisions missing from proposed Appendix C is found in section C104.1, which requires only a plaster or ½-inch drywall ceiling acting as a structural diaphragm. In hurricane conditions, for which Appendix C is intended, these materials become wet and lose structural capacity. Further, Appendix C is not specific about the force levels or prescriptive details for the load path between this ceiling diaphragm and roof trusses or perimeter wall framing.

We understand the proposed provisions are based on calculations produced for typical 1-2 family dwelling conditions by a qualified engineering consultant. However, some of the limitations and assumptions of those calculations do not appear in the proposed provisions, and some additional details are given in the provisions that were not reviewed by the consultant.

Procedurally, the provisions are incomplete and need significant editing to match the terminology and standards of the IEBC. For examples, proposed sections C104.2.4, C104.2.5, and C104.3.8 refer to a total of four figures that do not exist.

Final Action: AS AM AMPC___ D

EB73-09/10 804.1.1

Proposed Change as Submitted

Errata: This code change was contained in the errata posted on the ICC website.

Proponent: Tom Lariviere, Chairman - Joint Fire Service Review Committee

Revise as follows:

804.1.1 High-rise buildings. ~~In high-rise High-rise buildings, work areas shall be provided with automatic sprinkler protection throughout where the building has a sufficient municipal water supply system to the site. Where the work area exceeds 50 percent of floor area, sprinklers shall be provided in the specified areas where sufficient municipal water supply for design and installation of a fire sprinkler system is available at the site.~~

Reason: IEBC Chapter 8 applies to Level 3 alterations, which by definition already exceed 50% of the floor area. The entire Chapter 8 applies to alterations where the proposed work exceeds 50% of total floor area of the building. Therefore, the reference to 50% in Section 804.1.1 is redundant, and this portion of the Section 804.1.1 is deleted.

The additional part of this proposal is to eliminate the allowance for high-rise buildings to escape from the sprinkler requirements when the available water is inadequate. There are few, if any, water systems that are capable of providing sprinklers in a high rise building without a fire pump. Most newly constructed buildings require a fire pump to overcome low residual pressure in the municipal water system and are not provided an exception based on a "sufficient municipal water supply". High-rise buildings covered in IEBC Chapter 8 should be treated in the same manner as new construction in the requirements for fire detection and automatic fire suppression, and therefore the exception allowing elimination of the sprinkler system is deleted.

The existing language "sufficient municipal water supply" is vague as to application of water volume and/or pressure and fire flow requirement. In a practical sense, the existing municipal water supply could have sufficient volume but not sufficient pressure needed to push the water to the upper stories of the high rise. The exception could allow exclusion of the automatic sprinkler system that would otherwise be required in the IBC or IFC and therefore this exception should be eliminated from the IEBC. Existing fire protection standards supply engineering solutions for the provision of water where the municipal supply is lacking or non-existent.

Cost Impact: This code change proposal will increase the cost of construction.

ICCFILENAME: LARIVIERE-EB2-804.1.1

Public Hearing Results

Committee Action:

Disapproved

Committee Reason: The proposal was felt to be too restrictive and would be a disincentive to upgrading existing buildings. In particular it was felt that the IEBC needs to provide an incremental approach to installing sprinklers in high rise buildings. Without the incremental approach the framework of the IEBC will be undermined. Concern was raised that existing tenants located in the building where other tenants are making alterations would then be required to install a sprinkler system.

Assembly Action:

None

Individual Consideration Agenda

This item is on the agenda for individual consideration because a public comment was submitted.

Public Comment:

Joe Pierce, Dallas Fire Department and Joint Fire Service Review Chairman, representing the Joint Fire Service Review Committee, requests Approval as Submitted.

Commenter's Reason: This proposal was Disapproved at the Code Development Hearing because the Code Development Committee felt that the requirement was too restrictive. However, IEBC Section 804.1 only applies to Level 3 alterations, which by definition already exceed 50% of the floor area. In fact, the entire Chapter 8 applies to alterations where the proposed work exceeds 50% of total floor area of the building. So the wording in Section 804.1.1 of requiring fire sprinklers when the work area exceeds 50% is redundant at minimum.

But to the main point of the code change, this current wording allows for a high-rise which is required to install a fire sprinkler system based on this section to waive the requirements for the fire sprinkler system. It would be quite a surprise to find a municipal water system capable of supplying the required water. To understand this dilemma, you need to look at the mechanical requirements of the water system and the sprinkler system.

The fire sprinkler system must supply the required flow at the top floor. This means that the flow (let's estimate at 250 GPM) must be available at the roof (because that is where the sprinklers will be for the top floor). So we have 250 GPM that must be available at about 85 feet above the street, plus a fire hose flow of 100 GPM. To accomplish this, the municipal water supply must provide the 350 GPM at a pressure that can push the water to the roof and still provide enough pressure for the sprinkler to operate properly. To be classified as a "high-rise" the top floor must be at least 75 feet above grade, making the roof at about 85 feet. At 85 feet in height, the pressure required just to lift the water to that elevation is about 37 PSI. In addition to the 37 PSI we will also need the minimum sprinkler operating pressure of 7 PSI or more; plus the friction loss incurred through the piping bringing the water from the street to the building, up to the roof, and from the riser to the furthest sprinkler. This friction loss may be up to 15 PSI. We now have a total required pressure of 59 PSI, and this is a minimum.

Final Action: AS AM AMPC____ D
