2004/2005 PROPOSED CHANGES TO THE INTERNATIONAL EXISTING BUILDING CODE

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TENTATIVE ORDER OF DISCUSSION

2004-2005 PROPOSED CHANGES TO THE INTERNATIONAL EXISTING BUILDING CODE

The following is the tentative order in which the proposed changes to the code will be discussed at the public hearings. Proposed changes which impact the same subject have been grouped to permit consideration in consecutive changes.

Proposed change numbers that are indented are those which are being heard out of numerical order. Indentation **does not** necessarily indicate that one change is related to another. Proposed changes may be grouped for purposes of discussion at the hearing at the discretion of the chair.

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EB1-04/05
101.2, 604.2.2

Proponent: A. Hal Key, P.E., Fire Department, Mesa, AZ

Revise as follows:

101.2 Scope. The provisions of the *International Existing Building Code* and *International Fire Code* shall apply to the repair, alteration, change of occupancy, addition, and relocation of existing buildings. A building or portion of a building that has not been previously occupied or used for its intended purpose shall comply with the provisions of the *International Building Code* and the *International Fire Code* for new construction. Repairs, alterations, change of occupancy, existing buildings to which additions are made, historic buildings, and relocated buildings complying with the provisions of the *International Building Code, International Fire Code, International Mechanical Code, International Plumbing Code*, and *International Residential Code* as applicable shall be considered in compliance with the provisions of this code.

604.2.2 Groups A, E, F-1, H, I, M, R-1, R-2, R-4, S-1, and S-2. In buildings with occupancies in Groups A, E, F-1, H, I, M, R-1, R-2, R-4, S-1, and S-2, work areas that include exits or corridors shared by more than one tenant or that serve an occupant load greater than 30 shall be provided with automatic sprinkler protection where all of the following conditions occur:

1. The work area is required to be provided with automatic sprinkler protection in accordance with the *International Building Code* as applicable to new construction;
2. The work area exceeds 50 percent of the floor area; and
3. The building has sufficient municipal water supply for design of a fire sprinkler system available to the floor without installation of a new fire pump unless the *International Fire Code* requires a fire sprinkler system due to systems, equipment or processes.

Exception: Work areas in Group R occupancies three stories or less in height.

Reason: The Fire Code is added to Section 101.2 because it is a necessary reference due to the hazardous systems, processes and materials that building occupants may bring into these buildings.

The current requirements in Section 604.2.2 would allow a Level 2 alteration of an existing building by adding hazardous materials, processes or equipment where the Fire Code would require fire sprinklers. If the location did not have an adequate water supply, the hazardous materials, processes and equipment could be brought in and the fire sprinkler system is not required only because it is an existing building.

Analysis: A question would be if the proposed changes to Section 101.2 would be redundant language for the reference to the International Fire Code found in Section 101.4. In addition, other sections for automatic sprinkler systems refer to the *International Building Code* where sprinkler requirements are repeated from the *International Fire Code*.

Cost Impact: None

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

EB2-04/05
101.5.2

Proponent: Gary R. Searer, S.E., Wiss, Janney, Elstner Associates, Inc., Emeryville, CA, representing Gary R. Searer, S.E., and James A. Mahaney, S.E.

Delete without Substitution:

~~**101.5.2 Design values for existing materials and construction.** The incorporation of existing materials, construction, and detailing into the structural system shall be permitted when approved by the code official. Minimum quality levels and maximum strength values shall comply with this code.~~

Reason:
1. This existing requirement is unclear.
2. This requirement does not belong under Section 101.5 Maintenance.
3. It's not clear why or how you would "incorporate existing materials" into the structural system – these materials are already there.
4. In general, the use of existing materials and detailing into the structural system is commonly accepted practice and should be encouraged. The code should not give the impression that use of these materials is only at the pleasure of the building official. Clearly, if an engineer is using technically incorrect methodologies or assumptions, the building official has every right to reject the permit application; this is commonly understood for all aspects of design and construction – both new and old.
5. The requirement "Minimum quality levels and maximum strength values shall comply with this code" is exceedingly unclear. Furthermore, alternate engineering methods are always encouraged, but this requirement makes it seem that this code prohibits the use of alternate engineering methods.

Cost Impact: None

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

EB3-04/05
101, 102

Proponent: Greg Wheeler, C.B.O., Chair, ICC Ad Hoc Committee on Existing Buildings

Revise as follows:

SECTION 101
GENERAL

101.1 Title. These regulations shall be known as the *Existing Building Code* of [NAME OF JURISDICTION], hereinafter referred to as "this code".

101.2 Scope. The provisions of the *International Existing Building Code* shall apply to the repair, alteration, change of occupancy, addition, and relocation of existing buildings. ~~A building or portion of a building that has not been previously occupied or used for its intended purpose shall comply with the provisions of the *International Building Code* for new construction. Repairs, alterations, change of occupancy, existing buildings to which additions are made, historic buildings, and relocated buildings complying with the provisions of the *International Building Code*, *International Mechanical Code*, *International Plumbing Code*, and *Inter-national Residential Code* as applicable shall be considered in compliance with the provisions of this code.~~

101.3 Intent. The intent of this code is to provide flexibility to permit the use of alternative approaches to achieve compliance with minimum requirements to safeguard the public health, safety, and welfare insofar as they are affected by the repair, alteration, change of occupancy, addition, and relocation of existing buildings.

101.4 Applicability. This code shall apply to the repair, alteration, change of occupancy, addition, and relocation of all existing buildings, regardless of occupancy, subject to the criteria of Sections 101.4.1 and 101.4.2:

101.4.1 Buildings not previously occupied. A building or portion of a building that has not been previously occupied or used for its intended purpose in accordance with the laws in existence at the time of its completion shall comply with the provisions of the *International Building Code* or *International Residential Code*, as applicable, for new construction or with any current permit for such occupancy.

101.4.1.2 Buildings previously occupied. The legal occupancy of any building existing on the date of adoption of this code shall be permitted to continue without change, except as is specifically covered in this code, the *International Fire Code*, or the *International Property Maintenance Code*, or as is deemed necessary by the code official for the general safety and welfare of the occupants and the public.

101.5 Compliance alternatives. The repair, alteration, change of occupancy, addition, or relocation of all existing buildings shall comply with one of the alternatives listed in Sections 101.5.1 through 101.5.3. Application of an alternative is intended to be the sole basis for assessing the compliance of work performed under a single permit unless otherwise approved by the code official. Sections 101.5.1 through 101.5.3 are not intended to be applied in combination with each other.

> **Exception:** Subject to the approval of the code official, repairs and alterations complying with the laws in existence at the time the structure was originally built shall be considered in compliance with the provisions of this code.

101.5.1 Prescriptive compliance alternative: Repairs, alterations, additions, and changes of occupancy complying with Chapter 3 of this code in buildings complying with the *International Fire Code* shall be considered in compliance with the provisions of this code.

101.5.2 Work area compliance alternative: Repairs, alterations, additions, changes in occupancy, and relocated buildings complying with the applicable requirements of Chapters 4 through 12 of this code shall be considered in compliance with the provisions of this code.

101.5.3 Performance compliance alternative: Repairs, alterations, additions, changes in occupancy, and relocated buildings complying with Chapter 13 of this code shall be considered in compliance with the provisions of this code.

~~**101.5 Maintenance.** Buildings and parts thereof shall be maintained in a safe and sanitary condition. The provisions of the *International Property Maintenance Code* shall apply to the maintenance of existing buildings and premises; equipment and facilities; light, ventilation, space heating, sanitation, life and fire safety hazards; responsibilities of owners, operators, and occupants; and occupancy of existing premises and buildings. All existing devices or safeguards shall be maintained in all existing buildings. The owner or the owner's designated agent shall be responsible for the maintenance of the building. To determine compliance with this subsection, the code official shall have the authority to require a building to be reinspected. Except where specifically permitted by this code, the code shall not provide the basis for removal or abrogation of fire protection and safety systems and devices in existing buildings.~~

~~**101.5.1 Work on individual components or portions.** Where the code official determines that a component or a portion of a building or structure is in need of repair, strengthening or replacement by provisions of this code, only that specific component or portion shall be required to be repaired, strengthened, or replaced unless specifically required by other provisions of this code.~~

~~**101.5.2 Design values for existing materials and construction.** The incorporation of existing materials, construction, and detailing into the structural system shall be permitted when approved by the code official. Minimum quality levels and maximum strength values shall comply with this code.~~

SECTION 102
APPLICABILITY

~~**102.4.1 Standards and guidelines for structural evaluation.** The code official shall allow structural evaluation, condition assessment, and rehabilitation of buildings, structures, or individual structural members based on this code's appendix chapters, referenced standards, guidelines, or other approved standards and procedures.~~

~~**102.4.2 Compliance with other codes, standards, and guides.** Compliance with the structural provisions of the 2000 *International Building Code*, 2003 *International Building Code*, 1999 *BOCA National Building Code*, 1997 *Standard Building Code* or 1997 *Uniform Building Code* shall be deemed exceeding or equivalent to compliance with the structural provisions of this code.~~

Reason: The ICC Board established the Ad Hoc Committee on Existing Buildings to evaluate and further refine the IEBC in response to issues raised by the membership over the past couple of code development cycles. The key issues being: the need for more options to address the use and re-use of existing buildings, including the use of the current provisions in the IBC; how to better coordinate the IEBC with the other I-Codes; a review and clarification of specific provisions in the current IEBC; and the mechanism by which code development maintenance and the necessary coordination of provisions can best be achieved.

This proposal focuses on expanding the options afforded both the designer and enforcing agency with respect to existing buildings. A section-by-section discussion follows:

101.2, 101.4: The text in Section 101.2 has been relocated to proposed new section 101.4 that is specific to existing buildings. A scope statement should set forth the scope of the code, with the remainder of the general administrative section providing for the specifics as to how to realize the objective outlined in the scope statement. The provisions in Sections 101.4.1 and 101.4.2 regulate how to address existing buildings that 1.) have not been previously occupied and 2) have been previously occupied.

101.3: The 2003 IEBC lacks an intent statement which is found in most of the I-Codes. This text provides the framework for the application of the IEBC.

New 101.5: This is the key change of the proposal. It expands the options when dealing with existing buildings to the following:

- Exception - Subject to the approval of the code official, this option allow the repairs and alterations to comply with the requirements of the code at the time the building was built.
- 101.5.1- Utilize the provisions which are predominantly in Chapter 34 of the IBC- Sections 3401 through 3409 which have been duplicated in proposed new Chapter 3 of the IEBC. There are also provisions from the other I-Codes dealing with system installations (Electrical, Energy, Fuel Gas, Mechanical and Plumbing) which have been duplicated in the IEBC as well. As a duplication of provisions, the on-going code development maintenance will be accomplished by the code committee responsible for the code from which the provisions are being extracted and duplicated.
- 101.5.2 - Utilize the provisions contained in the IEBC which are based on a proportional approach to compliance where upgrades are triggered by the type and extent of the work.
- 101.5.3 - Utilize the provisions that are found in Section 3410 of the IBC- Compliance alternatives and duplicated in current Chapter 12 (renumbered to 13) of the IEBC.

Current 101.5: proposed for deletion as this is covered in Section 101.4.1 which requires all existing buildings to comply with the IFC and IPMC. The IEBC is not a maintenance code for existing buildings.

102.4.1 & 102.4.2: This section is covered in the proposed exception to Section 101.5. Instead of limiting the coverage to the structural provisions of specified editions of legacy codes and the IBC, the exception allows the jurisdiction to determine if their adopted code which regulated the initial construction is a contemporary code which should be acceptable for follow-up repairs, and alterations.

Cost Impact: None

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

EB4-04/05
104.2.1

Proponent: James N. Bartl, AIA,, James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh Inspections, NC

Revise as follows:

104.2.1 Preliminary meeting. When requested by the permit applicant or the code official, the code official shall meet with the permit applicant prior to the application for a construction permit to discuss plans for the proposed work or change of occupancy in order to establish the specific applicability of the provisions of this code.

Exception: (No change to current text)

Reason: The proposed revised language offers both the building owner and code enforcement official the opportunity to request a meeting. Currently as stated, only the permit applicant can request the meeting.

Cost Impact: None

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

EB5-04/05
101, 107, 108, 110, 202

Proponent: Greg Wheeler, C.B.O., Chair, ICC Ad Hoc Committee on Existing Buildings

1. Revise as follows:

SECTION 101
GENERAL

101.7 Appendices. The code official is authorized to require rehabilitation and retrofit of buildings, structures, or individual structural members in accordance with the

appendices of this code if such appendices have been individually adopted. ~~When any of such appendices is specifically referenced in the text of this code, it becomes a part of this code without any special adoption by the local jurisdiction.~~

SECTION 107
TEMPORARY ~~STRUCTURES AND~~ USES

107.1 General. The code official is authorized to issue a permit for ~~temporary structures and~~ temporary uses. Such permits shall be limited as to time of service but shall not be permitted for more than 180 days. The code official is authorized to grant extensions for demonstrated cause.

107.2 Conformance. Temporary ~~structures and~~ uses shall conform to the ~~structural strength,~~ fire safety, means of egress, accessibility, light, ventilation, and sanitary requirements of this code as necessary to ensure the public health, safety, and general welfare.

107.3 Temporary power. The code official is authorized to give permission to temporarily supply and use power in part of an electric installation before such installation has been fully completed and the final certificate of completion has been issued. The part covered by the temporary certificate shall comply with the requirements specified for temporary lighting, heat, or power in the ICC *Electrical Code*.

107.4 Termination of approval. The code official is authorized to terminate such permit for a temporary ~~structure or~~ use and to order the temporary structure or use to be discontinued.

SECTION 108
FEES

108.4 Work commencing before permit issuance. Any person who commences any work ~~on a building, electrical, gas, mechanical, or plumbing system~~ before obtaining the necessary permits shall be subject to an additional fee established by the code official that shall be in addition to the required permit fees.

SECTION 110
CERTIFICATE OF OCCUPANCY

110.2 Certificate issued. After the code official inspects the building and finds no violations of the provisions of this code or other laws that are enforced by the Department of Building Safety, the code official shall issue a certificate of occupancy that shall contain the following:

1. The building permit number.
2. The address of the structure.
3. The name and address of the owner.
4. A description of that portion of the structure for which the certificate is issued.
5. A statement that the described portion of the structure has been inspected for compliance with the requirements of this code for the occupancy and division of occupancy and the use for which the proposed occupancy is classified.
6. The name of the code official.
7. The edition of the code under which the permit was issued.
8. The use and occupancy in accordance with the provisions of the *International Building Code*.
9. The type of construction as defined in the *International Building Code*.
10. The design occupant load and any impact the alteration has on the design occupant load of the area not within the scope of the work.
11. If ~~an automatic sprinkler~~ fire protection systems are ~~is~~ provided, whether the sprinkler system is required.
12. Any special stipulations and conditions of the building permit.

2. Add new definition to read as follows:

SECTION 202
GENERAL DEFINITIONS

CODE OFFICIAL. The officer or other designated authority charged with the administration and enforcement of this code.

Reason: The ICC Board established the Ad Hoc Committee on Existing Buildings to evaluate and further refine the IEBC in response to issues raised by the membership over the past couple of code development cycles. The key issues being: the need for more options to address the use and re-use of existing buildings, including the use of the current provisions in the IBC; how to better coordinate the IEBC with the other I-Codes; a review and clarification of specific provisions in the current IEBC; and the mechanism by which code development maintenance and the necessary coordination of provisions can best be achieved.

This proposal focuses on the clarification of the administrative provisions found in the IEBC. A section-by-section discussion follows:

101.7: This proposed change coordinates the application of the appendices in the IEBC with the remaining I-codes – namely, the appendix is not part of the code unless specifically adopted.

107: Temporary structures are beyond the scope of the IEBC as they are covered in the IBC and IFC.

108.4: This proposal deletes the reference to the laundry list of systems as the text is unnecessary and in fact, may cause confusion for work which may not fall under one of the listed disciplines.

110.2: This item applies to all fire protection systems, not just a sprinkler system.

202: Added definition for consistency with those I-Codes which use the term “code official”.

Cost Impact: None

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

EB6-04/05

113.5 (New); IPMC 107.6 (New)

Proponent: Greg Wheeler, City of Thornton, Thornton, CO

THIS PROPOSAL IS ON THE AGENDA OF THE IEBC AND THE IPMC DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART 1 — IEBC

Add new text as follows:

113.5 Recordation of notice and order. If compliance is not had with the order within the time specified therein or the order is ignored, and no appeal has been properly and timely filed, the code official shall file in the office of the county recorder a certificate describing the property and certifying (i) that the building is a dangerous building and (ii) that the owner has been notified. Whenever the corrections ordered shall thereafter have been completed or the building demolished so that it no longer exists as a dangerous building on the property described in the certificate, the code official shall file a new certificate with the county recorder certifying that the building has been demolished or all required corrections have been made so that the building is no longer a dangerous building, whichever is appropriate.

PART II — IPMC

Add new text as follows:

107.6 Recordation of notice and order. If compliance is not had with the order within the time specified therein or the order is ignored, and no appeal has been properly and timely filed, the code official shall file in the office of the county recorder a certificate describing the property and certifying (i) that the building is a dangerous building and (ii) that the owner has been notified. Whenever the corrections ordered shall thereafter have been completed or the building demolished so that it no longer exists as a dangerous building on the property described in the certificate, the code official shall file a new certificate with the county recorder certifying that the building has been demolished or all required corrections have been made so that the building is no longer a dangerous building, whichever is appropriate.

Reason: This new subsection is an updated version that was contained in the Uniform Code for the Abatement of Dangerous Buildings. This subsection has been very instrumental in keeping property owners from selling their property to an unsuspecting buyer after a clandestine meth drug lab has been discovered. It is also a useful tool for other Notices and Orders that have been issued and are not being complied with by the responsible party. This certificate or lien of use is discovered during a title search and stops a sell until the code official removes it. Once a property has been cleaned and passes either the state requirements or the local jurisdiction's requirements or has been demolished and the soil is determined to be free of any hazardous materials, the code official is obligated to file a new certificate or release the lien of use.

Cost Impact: None

PART I — IEBC

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

PART II — IPMC

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

EB7-04/05

115.1, 116.1.1 (New), 202 (New); IPMC 108.1.4, 109.1.1 (New), 202 (New)

Proponent: Greg Wheeler, City of Thornton, Thornton, CO
THIS PROPOSAL IS ON THE AGENDA OF THE IEBC AND THE IPMC DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I — IEBC

1. Revise as follows:

115.1 Conditions. Buildings or existing equipment that are or hereafter become unsafe, insanitary, or deficient because of inadequate means of egress facilities, inadequate light and ventilation, or which constitute a fire hazard, or in which the structure or individual structural members exceed the limits established by the definition of Dangerous in Chapter 2, or that involve illegal or improper occupancy or activities or inadequate maintenance, shall be deemed an unsafe condition. Unsafe buildings shall be taken down and removed or made safe, as the code official deems necessary and as provided for in this code. A vacant structure that is not secured against entry shall be deemed unsafe.

2. Add new text as follows:

SECTION 116
EMERGENCY MEASURES

116.1 Imminent danger. When, in the opinion of the code official, there is imminent danger of failure or collapse of a building that endangers life, or when any building or part of a building has fallen and life is endangered by the occupation of the building, or when there is actual or potential danger to the building occupants or those in the proximity of any structure because of explosives, explosive fumes or vapors, or the presence of toxic fumes, gases, or materials, or operation of defective or dangerous equipment, the code official is hereby authorized and empowered to order and require the occupants to vacate the premises forthwith. The code official shall cause to be posted at each

entrance to such structure a notice reading as follows: "This Structure Is Unsafe and Its Occupancy Has Been Prohibited by the Code Official." It shall be unlawful for any person to enter such structure except for the purpose of securing the structure, making the required repairs, removing the hazardous condition, or of demolishing the same.

116.1.1 Clandestine drug laboratory. Any building or structure where a clandestine drug laboratory has been discovered shall be treated as an imminent danger under Section 116.1.

3. Add new text as follows:

SECTION 202
GENERAL DEFINITIONS

Clandestine Drug Laboratory. The areas where controlled substances, as defined by the Jurisdiction Having Authority, have been manufactured, processed, cooked, disposed of, stored and all proximate areas that are likely to be contaminated as a result of such manufacturing, processing, cooking, disposing, or storing.

PART II — IPMC

1. Revise as follows:

108.1.4 Unlawful structure. An unlawful structure is one found in whole or in part to be occupied by more persons than permitted under this code, or was erected, altered ~~or~~ occupied or used for activities contrary to law.

2. Add new text as follows:

109.1 Imminent danger. When, in the opinion of the code official, there is imminent danger of failure or collapse of a building or structure which endangers life, or when any structure or part of a structure has fallen and life is endangered by the occupation of the structure, or when there is actual or potential danger to the building occupants or those in the proximity of any structure because of explosives, explosive fumes or vapors or the presence of toxic fumes, gases or materials, or operation of defective or dangerous equipment, the code official is hereby authorized and empowered to order and require the occupants to vacate the premises forthwith. The code official shall cause to be posted at each entrance to such structure a notice reading as follows: "This Structure Is Unsafe and Its Occupancy Has Been Prohibited by the Code Official." It shall be unlawful for any person to enter such structure except for the purpose of securing the structure, making the required repairs, removing the hazardous condition or of demolishing the same.

109.1.1 Clandestine drug laboratory. Any building or structure where a clandestine drug laboratory has been discovered shall be treated as an imminent danger under Section 109.1.

3. Add new definition as follows:

SECTION 202
GENERAL DEFINITIONS

CLANDESTINE DRUG LABORATORY. The areas where controlled substances, as defined by the Jurisdiction Having Authority, have been manufactured, processed, cooked, disposed of, stored and all proximate areas that are likely to be contaminated as a result of such manufacturing, processing, cooking, disposing, or storing.

Reason: The reason for the addition of the words "or activities" , to section 115.1, is to clarify that an illegal occupancy and illegal activity are different, but that both can make an occupancy unsafe or insanitary, i.e. clandestine drug lab.

Adding section 116.1.1 will make it clear that a meth lab or clandestine drug lab is an imminent danger and should be treated as such. There by requiring the immediate posting and vacation of the building or structure.

The IEBC is a document that many jurisdictions maybe adopting, but not adopting the IPMC. The IEBC does not adequately define nor address dangerous buildings with regard to meth labs. Meth Labs are a growing danger that ultimately becomes the responsibility of the building department to deal with after everybody else has left the scene. The proposed definition should be generic enough to cover what a clandestine methamphetamine laboratory is. A jurisdiction is just as liable as the landlord when they are aware of one of these locations and do not address the situation.

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

PART I — IEBC

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

PART II —IPMC

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

EB8-04/05
115.3; IBC 115.3

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

THIS PROPOSAL IS ON THE AGENDA OF THE IEBC AND THE IBC GENERAL DEVELOPMENT COMMITTEES. SEE THE TENTATIVE HEARING ORDERS FOR THESE COMMITTEES.

PART I — IEBC

Revise as follows:

115.3 Notice. If an unsafe condition is found, the code official shall serve on the owner, agent, or person in control of the structure a written notice that describes the condition deemed unsafe and specifies the required repairs or improvements to be made to abate the unsafe condition, ~~or~~ and that requires the unsafe building to be demolished if the required repairs or improvements are not made within a stipulated time. ~~Such notice shall require the person thus notified to declare immediately to the code official acceptance or rejection of the terms of the order.~~

PART II — IBC

115.3 Notice. If an unsafe condition is found, the building official shall serve on the owner, agent or person in control of the structure, a written notice that describes the condition deemed unsafe and specifies the required repairs or improvements to be made to abate the unsafe condition, ~~or~~ and that requires the unsafe structure to be demolished if the required repairs or improvements are not made within a stipulated time. ~~Such notice shall require the person thus notified to declare immediately to the code official acceptance or rejection of the terms of the order.~~

Reason: Threatened demolition and immediate acquiescence of the building owner are likely to eliminate reasonable opportunities for professional review of existing conditions and thus do not serve the public interest.

Cost Impact: None

PART I — IEBC

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

PART II — IBC

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

EB9-04/05
202

Proponent: Gary R. Searer, S.E., Wiss, Janney, Elstner Associates, Inc., Emeryville, CA, representing himself

Revise definition as follows:

SECTION 202
GENERAL DEFINITIONS

DANGEROUS. Any building or structure or portion thereof ~~or any individual member~~ which, as a result of damage, including deterioration or decay, or as a result of substandard construction quality, meets ~~with~~ any of the ~~structural~~ conditions ~~or defects~~ described below shall be deemed dangerous:

~~1. The stress in a member or portion thereof due to all factored dead and live loads is more than one and one third the nominal strength allowed in the International Building Code for new buildings of similar structure, purpose, or location.~~
~~2. Any portion, member, or appurtenance thereof likely to fail, or to become detached or dislodged, or to collapse and thereby injure persons.~~
~~3. Any portion of a building, or any member, appurtenance, or ornamentation on the exterior thereof is not of sufficient strength or stability, or is not anchored, attached, or fastened in place so as to be capable of resisting a wind pressure of two thirds of that specified in the *International Building Code* for new buildings of similar structure, purpose, or location without exceeding the nominal strength permitted in the *International Building Code* for such buildings.~~
~~4. The building, or any portion thereof, is likely to collapse partially or completely because of dilapidation, deterioration or decay; construction in violation of the *International Building Code*; the removal, movement or instability of any portion of the ground necessary for the purpose of supporting such building; the deterioration, decay or inadequacy of its foundation; damage due to fire, earthquake, wind or flood; or any other similar cause.~~
~~5. The exterior walls or other vertical structural members list, lean, or buckle to such an extent that a plumb line passing through the center of gravity does not fall inside the middle one third of the base.~~

1. The structure has collapsed, partially collapsed, moved off its foundation, or lacks the support of any portion of ground necessary to support it.
2. The structure, building or any building story is significantly out of plumb.
3. Essential gravity-load carrying elements are severely damaged or distressed.
4. Imminent collapse, detachment, or dislodgment of a portion, member, appurtenance, or ornamentation could injure a person.

A building or structure classified as dangerous shall be permitted to be reclassified as not being dangerous by demonstrating that the dangerous condition has been mitigated to the satisfaction of the building official.

Reason: This proposal is intended to clarify and improve the existing language of this section.

This proposal improves the code official's ability to use and enforce the definition of "Dangerous" in urgent and emergency situations. The

proposal makes the designation of dangerous conditions a judgment of the code official (or his designee), but allowsmore detailed analysis to demonstrate that the structure is actually not dangerous.

"Dangerous," as used in this code and as implied by the existing definition, is principally a structural classification. (See section 115.) Other health and safety concerns are typically identified as "hazardous," or "insanitary" [sic]. "Dangerous" is defined so as to facilitate actions by code officials in the interest of public safety, principally in response to recent (or recently discovered) damage, whether accidental, natural, or intentional. Most dangerous conditions should be treated as emergencies. Therefore:

A "dangerous" condition should be imminently so, that is, ready to cause injury due to everyday or generally anticipated "service" loads (including reasonably predictable events such as aftershocks or storms), not rare future events.

A "dangerous" condition should be obviously so, that is, identifiable by reasonably experienced inspectors without the need for quantitative structural analysis.

A previously permitted occupancy does not become "dangerous" without some change of circumstance, typically damage from some identifiable cause. Undamaged buildings are not "dangerous" simply because they no longer comply with current code provisions, even if they are known to pose specific risks in their as-built condition (such as unreinforced masonry buildings in high seismic areas).

Given these presumptions, the designation should rely on the judgment of the code official (or a design professional designated by the code official). The specific conditions cited are based on concepts presented in ATC-20 for buildings deemed "Unsafe" or "red-taggable." Analysis should not be necessary for designation of such a condition; indeed, a requirement for time-consuming analysis would defeat the urgent purpose of the definition. However, analysis should be allowed to demonstrate that a possibly dangerous condition is in fact acceptable for short-term everyday conditions.

Analysis: A concern would be the enforcability of some of the proposed language.

Cost Impact: None

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

EB10-04/05
202

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise definition as follows:

SECTION 202
GENERAL DEFINITIONS

SUBSTANTIAL STRUCTURAL DAMAGE. A condition where:

1. In any story, the vertical elements of the lateral-force-resisting system~~, in any direction and taken as a whole,~~ have suffered damage such that the lateral load-carrying capacity of the structure in any horizontal direction has been reduced by more than 20 percent from its pre-damaged condition, or
2. ~~The vertical load-carrying components supporting more than 30 percent of the structure's floor or roof area have suffered a reduction in vertical load-carrying capacity to below 75 percent of the International Building Code required strength levels calculated by either the strength or allowable stress method.~~ The capacity of any vertical gravity load-carrying component, or any group of such components, that supports more than 30 percent of the total area of the structure's floor(s) and roof(s) has been reduced more than 20 percent from its pre-damaged condition, and the remaining capacity of such affected elements with respect to all dead and live loads is less than 75 percent of that required by the International Building Code for new buildings of similar structure, purpose, and location.

Reason: Proposed changes to paragraph 1 are editorial.

Proposed changes to paragraph 2 correct loopholes in the current wording. As currently worded, the provision is triggered not according to the extent of damage or capacity loss, but according to how the building compares with new buildings. Thus, if the damaged columns go from 78% of IBC to 73% of IBC, they have "substantial structural damage," but if they go from 100% to 75% they do not. The difference is important, as buildings with "substantial structural damage" must be repaired and/or altered to demonstrate full code compliance (per 407.3.2.1.1). While all capacity loss should be repaired, upgrade of this nature should be reserved for severe damage.

The proposal also makes paragraph 2 more like paragraph 1, that is, based on capacity loss relative to the pre-damaged condition. The critical issues for judging substantial structural damage should be significant capacity loss and resulting overstress. The proposed language addresses these issues.

Cost Impact: None

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

EB11-04/05
302.1, 302.3 (New)

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

1. Revise as follows:

302.1 Scope. Repairs, as defined in Chapter 2, include the patching or restoration or replacement of damaged materials, elements, equipment, or fixtures for the purpose of maintaining such ~~materials, elements, equipment, or fixtures~~ components in good or sound condition with respect

to existing loads or performance requirements.

2. Add new text as follows:

302.3 Related work. Work on non-damaged components that is necessary for the required repair of damaged components shall be considered part of the repair and shall not be subject to the provisions of Chapter 5, 6, 7, 8 or 9.

Reason: The proposal clarifies the intent of Chapter 4 that all work related to repairs should be covered by Chapter 4 so as to limit "scope creep."

In 302.1, "replacement" is added to clarify that when the most efficient means of repair is simply to replace the element in question, that should not trigger a Level 1 Alteration, which otherwise covers replacements. The word "damaged" is added to distinguish repairs from routine maintenance (cleaning, painting, etc.). "Damage," though not defined, is ordinarily presumed to include deterioration beyond normal wear and aging.

Cost Impact: None

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

EB12-04/05
304.1

Proponent: James N. Bartl, AIA,, James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh Inspections, NC

Revise as follows:

SECTION 304
ALTERATION—LEVEL 2

304.1 Scope. Level 2 alterations include the reconfiguration of space, the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment.

Where all of the following occur the work shall comply with the requirements for Level 3 alterations.

1. The work area cannot be occupied during construction;
2. The work area contains a primary function space, group, or tenancy; and;
3. The scope of the work exceeds a Level 1 alteration.

Reason: The addition of this proposed language would expand the application of code requirements for Alteration Level-3. The proposed language would lift projects out of Alteration Level-2 and place them in Alteration Level-3 where the scope of requirements more appropriately represents a reconstruction of tenancy or space. The requirements of accessibility and fire protection on a simple Alt-2 project of perhaps moving one interior wall to enlarge an office space would be overly burdensome.

Cost Impact: None

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

EB13-04/05
Chapter 3 (New)

Proponent: Greg Wheeler, C.B.O., Chair, ICC Ad Hoc Committee on Existing Buildings

Add new Chapter 3 to read as follows:

CHAPTER 3
PRESCRIPTIVE COMPLIANCE ALTERNATIVE

[B] SECTION 301
GENERAL

301.1 Scope. The provisions of this chapter shall apply to the alteration, repair, addition, change of occupancy of existing structures, including historic and moved structures, as referenced in Section 101.4.3.1.

Exception: Existing bleachers, grandstands and folding and telescopic seating shall comply with ICC 300-02.

301.1.1 Compliance with other alternatives. Alterations, repairs, additions and changes of occupancy to existing structures shall comply with the provisions of this chapter or with one of the alternatives provided in Section 101.4.3.

SECTION 302
ADDITIONS, ALTERATIONS OR REPAIRS

[B] 302.1 Existing buildings or structures. Additions or alterations to any building or structure shall conform with the requirements of the *International Building Code* for new construction. Additions or alterations shall not be made to an existing building or structure which will cause the existing building or structure to be in violation of any provisions of the *International Building Code*. An existing building plus additions shall comply with the height and area provisions of the *International Building Code*. Portions of the structure not altered and not affected by the alteration are not required to comply with the code requirements for a new structure.

[B] 302.1.1 Flood hazard areas. For buildings and structures in flood hazard areas established in Section 1612.3 of the *International Building Code*, any additions, alterations or repairs that constitute substantial

improvement of the existing structure, as defined in Section 1612.2 of the *International Building Code*, shall comply with the flood design requirements for new construction and all aspects of the existing structure shall be brought into compliance with the requirements for new construction for flood design.

[B] 302.2 Structural. Additions or alterations to an existing structure shall not increase the force in any structural element by more than 5 percent, unless the increased forces on the element are still in compliance with the code for new structures, nor shall the strength of any structural element be decreased to less than that required by the *International Building Code* for new structures. Where repairs are made to structural elements of an existing building, and uncovered structural elements are found to be unsound or otherwise structurally deficient, such elements shall be made to conform to the requirements for new structures.

[B] 302.2.1 Existing live load. Where an existing structure heretofore is altered or repaired, the minimum design loads for the structure shall be the loads applicable at the time of erection, provided that public safety is not endangered thereby.

[B] 302.2.2 Live load reduction. If the approved live load is less than required by Section 1607 of the *International Building Code*, the areas designed for the reduced live load shall be posted in with the approved load. Placards shall be of an approved design.

[B] 302.2.3 Seismic - additions. An addition that is structurally independent from an existing structure shall be designed and constructed as required for a new structure in accordance with the seismic requirements for new structures. An addition that is not structurally independent from an existing structure shall be designed and constructed such that the entire structure conforms to the seismic-force resistance requirements for new structures unless the following conditions are satisfied:

1. The addition conforms with the requirements for new structures,
2. The addition does not increase the seismic forces in any structural element of the existing structure by more than 5 percent, unless the element has the capacity to resist the increased forces determined in accordance with Sections 1613 through 1622, and
3. The addition does not decrease the seismic resistance of any structural element of the existing structure by more than 5 percent cumulative since the original construction, unless the element has the capacity to resist the forces determined in accordance with Sections 1613 through 1622 of the *International Building Code*.

[B] 302.2.4 Seismic - Alterations. Alterations are permitted to any structure without requiring the structure to comply with Sections 1613 through 1623 of the *International Building Code* provided the alterations conform to the requirements for a new structure. Alterations that increase the seismic force in any existing structural element by more than 5 percent or decrease the design strength of any existing structural element to resist seismic forces by more than 5 percent shall not be permitted unless the entire seismic-force-resisting system is determined to conform to Sections 1613 through 1623 of the *International Building Code* for a new structure.

Exception: Alterations to existing structural elements or additions of new structural elements that are not required by Sections 1613 through 1623 of the *International Building Code* and are initiated for the purpose of increasing the strength or stiffness of the seismic-force-resisting system of an existing structure need not be designed for forces conforming to Sections 1613 through 1623 of the *International Building Code* provided that an engineering analysis is submitted indicating the following:

1. The design strength of existing structural elements required to resist seismic forces is not reduced.
2. The seismic force to required existing structural elements is not increased beyond their design strength.
3. New structural elements are detailed and connected to the existing structural elements as required by this chapter.
4. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required Chapter 16 of the *International Building Code*.
5. The alterations do not create a structural irregularity as defined in Section 1616.5 or make an existing structural irregularity more severe.
6. The alterations do not result in the creation of an unsafe condition.

[B] 302.2.5 Alterations to trusses. Truss members and components shall not be cut, notched, drilled, spliced or otherwise altered in any way without written concurrence and approval of a registered design professional. Alterations resulting in the addition of loads to any member (e.g., HVAC equipment, water heater) shall not be permitted without verification that the truss is capable of supporting such additional loading.

[B] 302.2.6 Structural safety due to system installations. The building shall not be weakened by the installation of any electrical, fuel gas, mechanical or

plumbing system. In the process of installing or repairing any such system, the finished floors, walls, ceilings, tile work or any other part of the building or premises which is required to be changed or replaced shall be left in a safe structural condition in accordance with the requirements of the *International Building Code*.

[B] 302.3 Nonstructural. Nonstructural alterations or repairs to an existing building or structure are permitted to be made of the same materials of which the building or structure is constructed, provided that they do not adversely affect any structural member or the fire-resistance rating of any part of the building or structure.

[B] 302.4 Stairways. An alteration or the replacement of an existing stairway in an existing structure shall not be required to comply with the requirements of a new stairway as outlined in Section 1009 of the *International Building Code* where the existing space and construction will not allow a reduction in pitch or slope.

[EC] 302.5 Energy. Additions, alterations, or repairs to an existing building, building system or portion thereof shall conform to the provisions of the *International Energy Conservation Code* as they relate to new construction without requiring the unaltered portions of the existing building or building system to comply with the *International Energy Conservation Code*. Additions, alterations or repairs shall not create an unsafe or hazardous condition or overload existing building systems.

[ICC EC] 302.6 Electrical. Additions, alterations, renovations or repairs to electrical installations shall conform to the ICC *Electrical Code* without requiring the existing installation to comply with all of the requirements of this code. Additions, alterations or repairs shall not cause an existing installation to become unsafe, hazardous or overloaded.

Minor additions, alterations, renovations and repairs to existing installations shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is approved.

[FG] 302.7 Fuel gas. Additions, alterations, renovations or repairs to fuel gas installations shall conform to the *International Fuel Gas Code* without requiring the existing installation to comply with all of the requirements of this code. Additions, alterations or repairs shall not cause an existing installation to become unsafe, hazardous or overloaded.

Minor additions, alterations, renovations and repairs to existing installations shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is approved.

[M] 302.8 Mechanical. Additions, alterations, renovations or repairs to mechanical installations shall conform to the *International Mechanical Code* without requiring the existing installation to comply with all of the requirements of this code. Additions, alterations or repairs shall not cause an existing installation to become unsafe, hazardous or overloaded.

Minor additions, alterations, renovations and repairs to existing installations shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is approved.

[P] 302.9 Plumbing. Additions, alterations, renovations or repairs to plumbing installations shall conform to the *International Plumbing Codes* without requiring the existing installation to comply with all of the requirements of this code. Additions, alterations or repairs shall not cause an existing installation to become unsafe, hazardous or overloaded.

Minor additions, alterations, renovations and repairs to existing installations shall meet the provisions for new construction, unless such work is done in the same manner and arrangement as was in the existing system, is not hazardous and is approved.

[B] SECTION 303
FIRE ESCAPES

303.1 Where permitted. Fire escapes shall be permitted only as provided for in Sections 303.1.1 through 303.1.4.

303.1.1 New buildings. Fire escapes shall not constitute any part of the required means of egress in new buildings.

303.1.2 Existing fire escapes. Existing fire escapes shall be continued to be accepted as a component in the means of egress in existing buildings only.

303.1.3 New fire escapes. New fire escapes for existing buildings shall be permitted only where exterior stairs cannot be utilized due to lot lines limiting stair size or due to the sidewalks, alleys or roads at grade level. New fire escapes shall not incorporate ladders or access by windows.

303.1.4 Limitations. Fire escapes shall comply with this section and shall not constitute more than 50 percent of the required number of exits nor more than 50 percent of the required exit capacity.

303.2 Location. Where located on the front of the building and where projecting beyond the building line, the lowest landing shall not be less than 7 feet (2134 mm) or more

than 12 feet (3658 mm) above grade, and shall be equipped with a counterbalanced stairway to the street. In alleyways and thoroughfares less than 30 feet (9144 mm) wide, the clearance under the lowest landing shall not be less than 12 feet (3658 mm).

303.3 Construction. The fire escape shall be designed to support a live load of 100 pounds per square foot (4788 Pa) and shall be constructed of steel or other approved noncombustible materials. Fire escapes constructed of wood not less than nominal 2 inches (51 mm) thick are permitted on buildings of Type 5 construction. Walkways and railings located over or supported by combustible roofs in buildings of Type 3 and 4 construction are permitted to be of wood not less than nominal 2 inches (51 mm) thick.

303.4 Dimensions. Stairs shall be at least 22 inches (559 mm) wide with risers not more than, and treads not less than, 8 inches (203 mm) and landings at the foot of stairs not less than 40 inches (1016 mm) wide by 36 inches (914 mm) long, located not more than 8 inches (203 mm) below the door.

303.5 Opening protectives. Doors and windows along the fire escape shall be protected with 3/4-hour opening protectives.

[B] SECTION 304
GLASS REPLACEMENT

304.1 Conformance. The installation or replacement of glass shall be as required for new installations.

SECTION 305
CHANGE OF OCCUPANCY

[B] 305.1 Conformance. No change shall be made in the use or occupancy of any building that would place the building in a different division of the same group of occupancy or in a different group of occupancies, unless such building is made to comply with the requirements of the *International Building Code* for such division or group of occupancy. Subject to the approval of the building official, the use or occupancy of existing buildings shall be permitted to be changed and the building is allowed to be occupied for purposes in other groups without conforming to all the requirements of the *International Building Code* for those groups, provided the new or proposed use is less hazardous, based on life and fire risk, than the existing use.

[B] 305.2 Certificate of occupancy. A certificate of occupancy shall be issued where it has been determined that the requirements for the new occupancy classification have been met.

[B] 305.3 Stairways. Existing stairways in an existing structure shall not be required to comply with the requirements of a new stairway as outlined in Section 1009 of the *International Building Code* where the existing space and construction will not allow a reduction in pitch or slope.

[B] 305.4 Structural. When a change of occupancy results in a structure being reclassified to a higher seismic use group, the structure shall conform to the seismic requirements for a new structure.

Exceptions:

1. Specific detailing provisions required for a new structure are not required to be met where it can be shown an equivalent level of performance and seismic safety contemplated for a new structure is obtained. Such analysis shall consider the regularity, overstrength, redundancy and ductility of the structure within the context of the specific detailing provided.
2. When a change of use results in a structure being reclassified from Seismic Use Group I to Seismic Use Group II and the structure is located in a seismic map area where $S_{DS} << 0.33$, compliance with this section is not required.

[EC] 305.5 Energy. Buildings undergoing a change in occupancy that would result in an increase in demand for either fossil fuel or electrical energy shall comply with the *International Energy Conservation Code*.

Exception: The reconstruction or renewal of any part of an existing building.

[ICC EC] 305.6 Electrical. It shall be unlawful to make a change in the occupancy of a structure which will subject the structure to the special provisions of the ICC *Electrical Code* applicable to the new occupancy without approval. The code official shall certify that such structure meets the intent of the provisions of law governing building construction for the proposed new occupancy and that such change of occupancy does not result in any hazard to the public health, safety or welfare.

[FG] 305.7 Fuel gas. It shall be unlawful to make a change in the occupancy of a structure which will subject the structure to the special provisions of the *International Fuel Gas Code* applicable to the new occupancy without approval. The code official shall certify that such structure meets the intent of the provisions of law governing building construction for the proposed new occupancy and that such change of occupancy does not result in any hazard to the public health, safety or welfare.

[M] 305.8 Mechanical. It shall be unlawful to make a change in the occupancy of a structure which will subject

the structure to the special provisions of the ICC *Electrical Code*, International Fuel Gas, Mechanical, and Plumbing Codes, applicable to the new occupancy without approval. The code official shall certify that such structure meets the intent of the provisions of law governing building construction for the proposed new occupancy and that such change of occupancy does not result in any hazard to the public health, safety or welfare.

[P] 305.9 Plumbing. It shall be unlawful to make a change in the occupancy of a structure which will subject the structure to the special provisions of the *International Plumbing Code* applicable to the new occupancy without approval. The code official shall certify that such structure meets the intent of the provisions of law governing building construction for the proposed new occupancy and that such change of occupancy does not result in any hazard to the public health, safety or welfare.

[B] SECTION 306
HISTORIC BUILDINGS

306.1 Historic buildings. The provisions of this code relating to the construction, repair, alteration, addition, restoration and movement of structures, and change of occupancy shall not be mandatory for historic buildings where such buildings are judged by the building official to not constitute a distinct life safety hazard.

306.2 Flood hazard areas. Within flood hazard areas established in accordance with Section 1612.3 of the *International Building Code*, where the work proposed constitutes substantial improvement as defined in Section 1612.2 of the *International Building Code*, the building shall be brought into conformance with Section 1612 of the *International Building Code*.

Exception: Historic buildings that are:

1. Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places; or
2. Determined by the Secretary of the U.S. Department of Interior as contributing to the historical significance of a registered historic district or a district preliminarily determined to qualify as an historic district; or
3. Designated as historic under a state or local historic preservation program that is approved by the Department of Interior.

[B] SECTION 307
MOVED STRUCTURES

307.1 Conformance. Structures moved into or within the jurisdiction shall comply with the provisions of the International Building Code for new structures.

[B] SECTION 308
ACCESSIBILITY FOR EXISTING BUILDINGS

308.1 Scope. The provisions of Sections 308.1 through 308.8 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 the International Building Code are not required to be provided in existing buildings and facilities.

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

308.3 Change of occupancy. Existing buildings, or portions thereof, that undergo a change of group or occupancy 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 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. Change of group or occupancy that incorporates any alterations or additions shall comply with this section and Sections 308.4, 308.5, 308.6 and 308.7.

308.4 Additions. 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 in Section 308.6.

308.5 Alterations. A building, facility or element that is altered shall comply with the applicable provisions in Chapter 11 of the *International Building 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 308.6.
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.

308.5.1 Extent of application. An alteration of an existing element, space or area of a building or facility shall not impose a requirement for greater accessibility than that which would be required for new construction.

Alterations shall not reduce or have the effect of reducing accessibility of a building, portion of a building or facility.

308.6 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.

308.7 Scoping for alterations. The provisions of Sections 308.7.1 through 308.7.11 shall apply to alterations to existing buildings and facilities.

308.7.1 Entrances. Accessible entrances shall be provided in accordance with Section 1105 of the *International Building Code*.

Exception: Where an alteration includes alterations to an entrance, and the building or facility has an accessible entrance, the altered entrance is not required to be accessible, unless required by Section 308.6. Signs complying with Section 1110 of the *International Building Code* shall be provided.

308.7.2 Elevators. Altered elements of existing elevators shall comply with ASME A17.1 and ICC A117.1. Such elements shall also be altered in elevators programmed to respond to the same hall call control as the altered elevator.

308.7.3 Platform lifts. Platform (wheelchair) lifts complying with ICC A117.1 and installed in accordance with ASME A18.1 shall be permitted as a component of an accessible route.

308.7.4 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*.

308.7.5 Ramps. Where steeper slopes than allowed by Section 1010.2 are necessitated by space limitations, the slope of ramps in or providing access to existing buildings or facilities shall comply with Table 308.7.5.

TABLE 308.7.5
RAMPS

SLOPE	MAXIMUM RISE
Steeper than 1:10 but not steeper than 1:8	3 inches
Steeper than 1:12 but not steeper than 1:10	6 inches

308.7.6 Performance areas. Where it is technically infeasible to alter performance areas to be on an accessible route, at least one of each type of performance area shall be made accessible.

308.7.7 Dwelling or sleeping units. Where 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 of the *International Building Code* for Accessible or Type A units and Chapter 9 for accessible alarms apply only to the quantity of spaces being altered or added.

308.7.8 Jury boxes and witness stands. In alterations, accessible wheelchair spaces are not required to be located within the defined area of raised jury boxes or witness stands and shall be permitted to be located outside these spaces where the ramp or lift access restricts or projects into the means of egress.

308.7.9 Toilet rooms. Where it is technically infeasible to

alter existing toilet and bathing facilities to be accessible, an accessible unisex toilet or bathing facility is permitted. The unisex facility shall be located on the same floor and in the same area as the existing facilities.

308.7.10 Dressing, fitting and locker rooms. Where it is technically infeasible to provide accessible dressing, fitting or locker rooms at the same location as similar types of rooms, one accessible room on the same level shall be provided. Where separate-sex facilities are provided, accessible rooms for each sex shall be provided. Separate-sex facilities are not required where only unisex rooms are provided.

308.7.11 Check-out aisles. Where check-out aisles are altered, at least one of each check-out aisle serving each function shall be made accessible until the number of accessible check-out aisles complies with Section 1109.12.2 of the *International Building Code*.

308.7.12 Thresholds. The maximum height of thresholds at doorways shall be 3/4 inch (19.1 mm). Such thresholds shall have beveled edges on each side.

308.8 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, 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 308.8.1 through 308.8.5 for that element shall be permitted.

308.8.1 Site arrival points. At least one accessible route from a site arrival point to an accessible entrance shall be provided.

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

308.8.3 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.

Signs complying with Section 1110 of the *International Building Code* shall be provided at the primary entrance and the accessible entrance.

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

308.8.5 Ramps. The slope of a ramp run of 24 inches (610 mm) maximum shall not be steeper than one unit vertical in eight units horizontal (12-percent slope).

Reason: The ICC Board established the Ad Hoc Committee on Existing Buildings to evaluate and further refine the IEBC in response to issues raised by the membership over the past couple of code development cycles. The key issues being: the need for more options to address the use and re-use of existing buildings, including the use of the current provisions in the IBC; how to better coordinate the IEBC with the other I-Codes; a review and clarification of specific provisions in the current IEBC; and the mechanism by which code development maintenance and the necessary coordination of provisions can best be achieved.

This proposal focuses on expanding the options afforded both the designer and enforcing agency with respect to existing buildings by duplicating the provisions in Sections 3401 through 3409 of the IBC in the IEBC. In order to ensure coordination with the IBC (and other I-Codes), as noted by the [ ], the maintenance of these provisions will be accomplished by the respective I-Code development committee.

The following is a section-by-section cross reference of the IBC (and other I-Code sections) with those proposed here:

IBC Section	**Proposed IEBC**
3401.1	301.1
3401.2	101.4 of companion code change
3401.3	Not needed; provisions from I-Codes duplicated in the proposal
3402	Defined in current 202
3403.1	302.1
3403.1.1 (Supp)	302.1.1
3403.2	302.2
3403.2.1	302.2.1
3403.2.2	302.2.2
1614.1.1	302.2.3
1614.3	302.2.4
2308.10.7.3	302.2.5
IFGC 302.1, IMC 302.1, IPC 307.1	302.2.6
3403.3	302.3
3403.4	302.4
IECC 101.4.3	302.5
ICC EC 102.1.3	302.6
IFGC 102.4	302.7

IBC Section	**Proposed IEBC**
IMC 102.4	302.8
IPC 102.4	302.9
3404 (all)	303 (all)
3405 (all)	304 (all)

3406.1	305.1
3406.2	305.2
3406.3	305.3
IBC 1614.2	305.4
IECC 101.4.4	305.5
ICC EC 102.1.4	305.6
IFGC 102.5	305.7
IMC 102.5	305.8
IPC 102.5	305.9
3407 (all)	306 (all)
3408 (all)	307 (all)
3409 (all)	308 (all)

Cost Impact: None

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

EB14-04/05
Chapter 3

Proponent: Greg Wheeler, C.B.O., Chair, ICC Ad Hoc Committee on Existing Buildings

Revise as follows:

CHAPTER ~~3~~ 4
CLASSIFICATION OF WORK

SECTION ~~301~~ 401
GENERAL

~~301.1~~ 401.1 Scope. The provisions of this chapter shall be used in conjunction with Chapters 5 through 12 and shall apply to the alteration, repair, addition, change of occupancy of existing structures, including historic and moved structures, as referenced in Section 101.5.2. The work performed on an existing building shall be classified in accordance with this chapter.

401.1.1 Compliance with other alternatives. Alterations, repairs, additions and changes of occupancy to existing structures shall comply with the provisions of Chapters 4 through 12 or with one of the alternatives provided in Section 101.5.

~~301.2~~ 401.2 Work area. (No change to current text)

~~301.3 Compliance alternatives.~~ ~~The provisions of Chapter 4 through 10 are not applicable where the building complies with Chapter 12.~~

~~301.4~~ 401.3 Occupancy and use. (No change to current text)

(Renumber remainder of current Chapter 3 and Chapters 4 through 11)

Reason: The ICC Board established the Ad Hoc Committee on Existing Buildings to evaluate and further refine the IEBC in response to issues raised by the membership over the past couple of code development cycles. The key issues being: the need for more options to address the use and re-use of existing buildings, including the use of the current provisions in the IBC; how to better coordinate the IEBC with the other I-Codes; a review and clarification of specific provisions in the current IEBC; and the mechanism by which code development maintenance and the necessary coordination of provisions can best be achieved.

This proposal is a coordination change with the proposal to Section 101 - focusing on expanding the options afforded both the designer and enforcing agency with respect to existing buildings. A section-by-section discussion follows:

401.1: Coordinates the provisions of Chapter 1 with the work area compliance alternatives in Chapters 5 -12.

401.1.1: This text is added for the benefit of the user to let them know that the provisions of Chapters 4 - 12 are only one of three options provided for in the IEBC.

Cost Impact: None

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

EB15-04/05
202 (New), 403.1, 503.1.1 (New), 604.2.2.2 (New), 604.4.1.1 (New), 802.3 (New)

Proponent: Steven Rocklin, New York State Department of State, Division of Code Enforcement, Albany, NY

1. Add new definition as follows:

SECTION 202
GENERAL DEFINITIONS

NIGHTCLUB. The use of a building or portion thereof in Occupancy Group A-2 for live or recorded entertainment or as a dance hall in Occupancy Group A-3, where at least twenty percent of the subject assembly space is for concentrated occupancy, with or without fixed seating, where the net assembly floor area per persons is 7 square feet (6.5 m2) or less. For the purpose of this code, entertainment shall not be deemed to include jukeboxes or background music.

2. Revise as follows:

403.1 Hazardous materials. Hazardous materials that are no longer permitted, such as asbestos, ~~and~~ lead-based paint, and foam plastics not in compliance with Section 801.2.2 of the *International Building Code* shall not be used.

3. Add new text as follows:

503.1.1 Nightclubs. Foam plastic materials not in compliance with Section 801.2.2 of the *International*

Building Code shall be removed from work areas in existing nightclubs.

604.2.2.2 Nightclubs. Work areas that include a nightclub or means of egress serving a nightclub shall be provided with automatic sprinkler protection where the building has sufficient municipal water supply for the design of a fire sprinkler system available to the floor without the installation of a new fire pump.

604.4.1.1 Nightclubs. An automatic fire alarm system shall be installed in work areas containing or located within a nightclub.

(Renumber subsequent sections)

802.3 Nightclubs. Where there is a change of use to a nightclub, the building or tenant space, and the means of egress therefrom shall comply with the requirements of the *International Building Code* for new construction.

Reason: In order to provide the public with a reasonable level of safety, this proposal would define the term 'nightclub' so as to limit its application to facilities that pose the greatest risk to public safety, and provide for fire safety provisions that increase in stringency with expansion of the scope of intended rehabilitation work. In doing so, the proposal retains the proportional approach of the IEBC.

The primary benefit will be a reduction in the probability of multiple fatality fires in nightclubs. Data available from the National Fire Protection Association (NFPA) indicate that in dining and drinking establishments, the fatality rate per 1,000 fires is 0.8 in buildings not equipped with automatic sprinkler systems, and 0.0 in buildings that are equipped with such systems. The addition of a requirement for sprinkler systems in such buildings will reduce the potential for multiple fatalities. There are no similar data examining the impact of differing interior finishes, fire alarm systems or characteristics of the means of egress; however, post-fire analyses prepared by NFPA have indicated that delayed notification of occupants and inadequate protection of the means of egress have contributed to fatalities in public assembly fire incidents.

While fires that result in a large number of fatalities in public assembly occupancies have been rare events in the United States, they have the worst fatality record on a fatalities-per-incident basis. The large numbers of fatalities in fires such as the Station nightclub and Happy Land Social Club are considered an unacceptable consequence by members of the public and governmental leaders, typically leading to changes in laws and regulations intended to reduce the potential for recurrences.

Costs of complying with this proposal will vary widely, depending upon the scope of the intended rehabilitation work, the size of the nightclub, construction features of the existing building, and availability of public utilities to the site.

Where Level 1 alterations to existing nightclubs are intended, owners would be required to remove existing foam plastic materials from affected areas that would be prohibited for new construction by the IBC. It is considered likely that areas covered by such materials would be limited in extent. Depending upon the composition of existing substrates, demolition and removal of existing foam plastic and substrate would cost in the range of $0.45 to $1.35 per square foot; installation and finishing of new drywall would cost approximately $2.00 per square foot.

Where it is intended to undertake Level 2 or 3 alterations of existing nightclubs, as defined in the IEBC, the proposal would add provisions in addition to those for interior finishes. The installation of an automatic sprinkler system would be required where an adequate water supply is available. Where fire pumps and necessary accessories are not required, automatic sprinkler systems can be installed for $1.50 to $4.00 per square foot. The estimated cost of a required fire detection system is $0.60 to $0.75 per square foot.

Modifications to the means of egress may be required for some nightclubs undergoing Level 2 or 3 alterations; however, it is not feasible to estimate the costs involved without a profile of a 'typical' nightclub. For a nightclub located on a grade level story, adding one exit door may cost $2,500 to $3,000, excluding the cost of a ramp to grade. If required, a new exit stair may cost up to $6,000 per story in low-rise construction.

Where the occupancy of a building or portion thereof is changed to a nightclub, additional costs beyond those required for alterations may be required.

Sources for costs cited in this section include R.S. Means Repair and Remodeling Cost Data, and estimates from engineers and contractors familiar with fire protection systems.

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

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

EB16-04/05
407.1.1.1

Proponent: Fred Turner, California Seismic Safety Commission, Sacramento, CA, representing himself

Revise as follows:

407.1.1.1 Evaluation and design procedures. The seismic evaluation and design of an existing building shall be based on the procedures specified in the *International Building Code*, Appendix A of this code (GSREB), ASCE 31 or FEMA 356 as modified by FEMA 440.

Reason: FEMA 356 analysis procedures are in a state of flux pending further research and consensus development within the earthquake engineering profession. At the time of this code change proposal, the Displacement Coefficient Analysis Procedure in FEMA 356 titled "Pre-Standard and Commentary for the Seismic Rehabilitation of Buildings" has not been successfully balloted as a national standard and is undergoing major revision. FEMA 440 "Improvement of Nonlinear Static Seismic Analysis Procedures" proposes a number of changes to the Coefficient Method and the Capacity Spectrum Method. ASCE's Standards Committee has not yet balloted FEMA 440. FEMA 440 concludes that nonlinear static methods cannot provide reliable estimates of multi-degree of freedom effects, so it recommends nonlinear response history analysis to better estimate these effects. It provides adjustments to FEMA 356 for soil-structure interaction effects, particularly for short period buildings, as well as adjustments to the displacement coefficient method and the capacity spectrum method that reduce the differences between analyses using nonlinear static procedures and nonlinear time history procedures.

Analysis: FEMA 440 has not been submitted to ICC staff. Therefore, ICC staff has not been able to determine if the document meets ICC referenced standard requirements. Staff will review it and post the results at the ICC website prior to the code change hearings.

Cost Impact: None

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

EB17-04/05
407.1.1.3

Proponent: David Bonowitz, S.E., San Francisco, CA, representing SEAOC Existing Buildings Committee

Revise as follows:

407.1.1.3 (Supp) Reduced IBC level seismic forces. When seismic forces are permitted to meet reduced *International Building Code* levels, they shall be ~~based on~~ one of the following

1. 75 percent of the ~~assumed~~ forces prescribed in the *International Building Code*~~,~~. Where the *International Building Code* is used, the *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor as specified in Section 407.1.1.2.
2. Those specified by applicable chapters in Appendix A of this code (GSREB)~~,~~.
3. Those prescribed by ASCE 31. Where ASCE 31 is used, the performance level shall be that ~~the applicable performance level of ASCE 31 as~~ shown in Table 407.1.1.2~~, or~~.
4. Those associated with ~~the applicable performance level for~~ the BSE-1 Earthquake Hazard Level ~~of~~ defined in FEMA 356. Where FEMA 356 is used, the performance level shall be that shown in Table 407.1.1.2. ~~Where the *International Building Code* is used, the *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor as specified in Section 407.1.1.2 of this code.~~ Where FEMA 356 is used, the design spectral response acceleration parameters S_{XS} and S_{X1} shall not be taken less than 75% of the respective design spectral response acceleration parameters S_{DS} and S_{D1} defined by the IBC and its reference standards.

Reason: Proposed revisions shown as items 1, 2, and 3, as well as the first two sentences of item 4, are editorial. They greatly clarify the existing language by listing the four options in separate sentences.

The last sentence of proposed item 4 brings greater consistency in ground motion assumptions to the four different options associated with "Reduced IBC forces." The thrust of it is to set a floor on the FEMA 356 BSE-1 demands, which are based on 10%/50-yr values as opposed to MCE values used in the IBC and ASCE 31. It is potentially confusing to compare "forces" between FEMA 356 and the IBC because the design forces in the IBC include a reduction by R. Spectral values, however, can be compared, and that is what this proposal does.

The following table compares the terminology of FEMA 356 and the 2003 IBC/ASCE 7-02. Each row shows a different way of comparing spectral values. The most direct apples-to-apples comparison would involve the two period-specific "design" values, so that is what the proposal uses. (The FEMA 356 spectral values may still be reduced below the intended floor if a damping ratio higher than 5% applies.)

(As proposed, two values are to be compared between BSE-1 and 75% IBC. This could be confusing if one of the values triggers the limit but the other does not. The final value of Sa will probably be the same, however. It would be simpler to compare only one parameter, but that would eliminate the option of alternative damping ratios provided by FEMA 356. Therefore, the proposal recommends the comparison of the two design values.)

	FEMA 356 BSE-1	2003 IBC/ASCE 7-02
Mapped values	S_s, S_1 From 10/50 maps	S_s, S_1 From MCE maps
Soil-adjusted values	S_{sx}, S_{x1}	S_{MS}, S_{M1} Still at MCE level
"Design" values	S_{XS}, S_{X1} Includes soil adjustment (or 2/3 MCE, whichever is smaller)	S_{DS}, S_{D1} Reduced to 2/3 MCE; includes soil adjustment
All period spectrum for use in base shear equation	S_a, based on S_{XS}, S_{X1} adjustable to any damping ratio	S_a, based on S_{DS}, S_{D1} assumes 5% damping

Cost Impact: None

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

EB18-04/05
202, 401.2, 401.3, 407.1.1, 407.1.1.1, 407.1.1.2, Table 407.1.1.2, 407.1.1.3, 407.2

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

SECTION 202
GENERAL DEFINITIONS

SEISMIC LOADING. The ~~assumed~~ forces prescribed herein, related to the response of the structure to

earthquake motions, to be used in the analysis and design of the structure and its components.

401.2 Permitted materials. Except as otherwise required ~~herein, work shall be done using~~ or permitted by this code, materials permitted by the applicable code for new construction ~~or using like~~ shall be used. Like materials ~~such that~~ shall be permitted provided no hazard to life, health or property is created.

401.3 Conformance. The repair work shall not make the building less conforming to the building, plumbing~~,~~; mechanical, electrical or fire codes of the jurisdiction~~,~~ or to alternative materials, design and methods of construction~~,~~; or to any previously approved plans, modifications, alternative methods, or compliance alternatives~~,~~ than it was before the repair was undertaken.

407.1.1 Seismic evaluation and design. Seismic evaluation and design of an existing building and its components shall be based on the ~~assumed forces related to the response of the structure to earthquake motions~~ following criteria.

407.1.1.1 Evaluation and design procedures. The seismic evaluation and design ~~of an existing building~~ shall be based on the procedures specified in the *International Building Code*, Appendix A ~~of this code~~ (GSREB), ASCE 31 or FEMA 356. For Category III and IV buildings, the procedures specified in Chapters A1, A2, A3, and A4 of Appendix A (GSREB) shall not be permitted.

407.1.1.2 (Supp) IBC level seismic forces. When seismic forces are required to meet the *International Building Code* level, they shall be ~~based on~~ 100 percent of the values in the *International Building Code* or those associated with the BSE-1 and BSE-2 Earthquake Hazard Levels defined in FEMA 356. Where the *International Building Code* is used, the *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor specified for structural systems classified as "Ordinary" in accordance with Table 1617.6.2 unless it can be demonstrated that the structural system satisfies the proportioning and detailing requirements for systems classified as "Intermediate" or "Special". Where FEMA 356 is used, ~~the FEMA 356 Basic Safety Objective (BSO) shall be used for buildings in Seismic Use Group I. For buildings in other Seismic Use Groups the applicable FEMA 356 performance levels shown in Table 407.1.1.2 for BSE-1 and BSE-2 Earthquake Hazard Levels shall be used~~ the corresponding performance levels shall be those shown in Table 407.1.1.2.

TABLE 407.1.1.2
~~IBC SEISMIC USE GROUP EQUIVALENT TO~~
FEMA 356 and ASCE 31 PERFORMANCE LEVELS[a]

~~SEISMIC USE GROUP~~ CATEGORY (BASED ON IBC TABLE 1604.5)	PERFORMANCE LEVEL ~~S OF~~ FOR USE WITH ASCE 31 AND WITH FEMA 356 BSE-1 EARTHQUAKE HAZARD LEVEL	PERFORMANCE LEVEL ~~S OF~~ FOR USE WITH FEMA 356 BSE-2 EARTHQUAKE HAZARD LEVEL
I	Life Safety (LS)	Collapse Prevention (CP)
II	Life Safety (LS)	Collapse Prevention (CP
III	Note ~~b~~ a	Note ~~b~~ a
IV	Immediate Occupancy (IO)	Life Safety (LS)

~~a. The charging provisions for Seismic Use Group equivalents to ASCE 31 and FEMA 356 BSE-1 for reduced *International Building Code* level seismic forces are located in Section 407.1.1.3.~~

~~b.~~ a. Performance Levels for ~~Seismic Use Group~~ Category III shall be taken as halfway between the performance levels specified for ~~Seismic Use Groups~~ Category II and Category IV.

407.1.1.3 (Supp) Reduced IBC level seismic forces. When seismic forces are permitted to meet reduced *International Building Code* levels, they shall be ~~based on~~ one of the following:

1. 75 percent of the ~~assumed~~ forces prescribed in the *International Building Code*~~,~~. Where the *International Building Code* is used, the *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor as specified in Section 407.1.1.2.
2. Those specified by applicable chapters in Appendix A of this code (GSREB)~~,~~.
3. Those prescribed by ASCE 31. Where ASCE 31 is used, the performance level shall be that ~~the applicable performance level of ASCE 31 as~~ shown in Table 407.1.1.2, ~~or~~ .
4. Those associated with ~~the applicable performance level for~~ the BSE-1 Earthquake Hazard Level ~~of~~ defined in FEMA 356. Where FEMA 356 is used, the performance level shall be that shown in Table 407.1.1.2. ~~Where the *International Building Code* is used, the *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor as specified in Section 407.1.1.2 of this code.~~

407.2 Reduction of strength. Repairs shall not reduce the ~~structural~~ strength or stability of the ~~building,~~ structure~~,~~ or any individual member thereof.

Exception: Such reduction shall be allowed provided the capacity is not reduced to ~~below~~ less than that required the *International Building Code* ~~levels~~ using 100 percent of its prescribed loads.

Reason: The proposal is editorial, but necessary for consistent interpretation and enforcement.

1. Replace Seismic Use Group with Category. (ASCE 7-05 will use Occupancy Category and will phase out SUG.)
2. Eliminate use of term "assumed seismic forces" because 1) "prescribed" is the preferred term, 2) FEMA 356 and other criteria are primarily displacement based, not force based. Principal change is to Chapter 4, but similar changes should also be made to section 202.
3. Removal of commentary language, as in 407.1.1, or repetitive language, as in 407.1.1.2.
4. Miscellaneous editorial changes to improve clarity, usability, and enforceability.

Cost Impact: None

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

EB19-04/05
Chapter 4

Proponent: Greg Wheeler, C.B.O., Chair, ICC Ad Hoc Committee on Existing Buildings
Revise as follows:

SECTION 401
GENERAL

401.3 Conformance. The work shall not make the building less conforming than it was before the repair was undertaken. ~~The work shall not make the building less conforming to the building, plumbing, mechanical, electrical or fire codes of the jurisdiction, or to alternative materials, design and methods of construction, or any previously approved plans, modifications, alternative methods, or compliance alternatives, than it was before the repair was undertaken.~~

~~**SECTION 402**~~
~~**SPECIAL USE AND OCCUPANCY**~~

~~**402.1 General.** Repair of buildings classified as special use or occupancy as described in the International Building Code shall comply with the requirements of this chapter.~~

SECTION 408
ELECTRICAL

408.1 Material. Existing electrical wiring and equipment undergoing repair shall be allowed to be repaired or replaced with like material.

~~**Exceptions:**~~

~~1.~~ **408.1.1 Receptacles.** Replacement of electrical receptacles shall comply with the applicable requirements of Section 406.3(D) of NFPA 70.

~~2.~~ **408.1.2 Plug fuses.** Plug fuses of the Edison-base type shall be used for replacements only where there is no evidence of over fusing or tampering per applicable requirements of Section 240.51(B) of NFPA 70.

~~3.~~ **408.1.3 Nongrounding-type receptacles.** For replacement of nongrounding-type receptacles with grounding-type receptacles and for branch circuits that do not have an equipment grounding conductor in the branch circuitry, the grounding conductor of a grounding-type receptacle outlet shall be permitted to be grounded to any accessible point on the grounding electrode system, or to any accessible point on the grounding electrode conductor in accordance with Section 250.130(C) of NFPA 70.

~~4.~~ **408.1.4Group I-2 receptacles.** Non-"hospital grade" receptacles in patient bed locations of Group I-2 shall be replaced with "hospital grade" receptacles, as required by NFPA 99 and Article 517 of NFPA 70.

~~5.~~ **408.1.5 Grounding of appliances.** Frames of electric ranges, wall-mounted ovens, counter-mounted cooking units, clothes dryers, and outlet or junction boxes that are part of the existing branch circuit for these appliances shall be permitted to be grounded to the grounded circuit conductor in accordance with Section 250.140 of NFPA 70.

SECTION 409
MECHANICAL

409.1 General. Existing mechanical systems undergoing repair shall ~~comply with Section 401.1 and the scoping provisions of Chapter 1 where applicable~~ not make the building less conforming than it was before the repair was undertaken.

SECTION 410
PLUMBIING

410.1 Materials. ~~The following~~ Plumbing materials and supplies shall not be used for repairs that are prohibited in the International Plumbing Code~~:~~.

~~1. Sheet and tubular copper and brass trap and tailpiece fittings less than the minimum wall thickness of .027 inch (0.69 mm).~~
~~2. Solder having more than 0.2-percent lead in the repair of potable water systems.~~
~~3. Water closets having a concealed trap seal or an unventilated space or having walls that are not~~

~~thoroughly washed at each discharge in accordance with ASME A112.19.2M.~~

~~4. The following types of joints shall be prohibited:~~

~~4.1. Cement or concrete joints.~~

~~4.2. Mastic or hot-pour bituminous joints.~~

~~4.3. Joints made with fittings not approved for the specific installation.~~

~~4.4. Joints between different diameter pipes made with elastomeric rolling O-rings.~~

~~4.5. Solvent-cement joints between different types of plastic pipe.~~

~~4.6. Saddle-type fittings.~~

~~5. The following types of traps are prohibited:~~

~~5.1. Traps that depend on moving parts to maintain the seal.~~

~~5.2. Bell traps.~~

~~5.3. Crown-vented traps.~~

~~5.4. Traps not integral with a fixture and that depend on interior partitions for the seal, except those traps constructed of an approved material that is resistant to corrosion and degradation.~~

410.2 Water closet replacement. ~~When any water closet is replaced, the replacement water closet shall comply with the *International Plumbing Code*.~~ The maximum water consumption flow rates and quantities for all replaced water closets shall be 1.6 gallons (6 L) per flushing cycle.

Exception: Blowout-design water closets [3.5 gallons (13L) per flushing cycle].

Reason: The ICC Board established the Ad Hoc Committee on Existing Buildings to evaluate and further refine the IEBC in response to issues raised by the membership over the past couple of code development cycles. The key issues being: the need for more options to address the use and re-use of existing buildings, including the use of the current provisions in the IBC; how to better coordinate the IEBC with the other I-Codes; a review and clarification of specific provisions in the current IEBC; and the mechanism by which code development maintenance and the necessary coordination of provisions can best be achieved.

This proposal focuses on the clarification of the repair provisions of Chapter 4 of the IEBC. A section-by-section discussion follows:

401.3: There is no need for a laundry list of issues to be considered in the context of a repair. The repair must not make the building less conforming, regardless of the system type and whether or not it is based on an alternative material.

402: This section serves no purpose. All buildings or building types undergoing a repair must comply with Chapter 4.

408: These are not exceptions but rather requirements and are re-formatted as such.

409: Correlated with the proposed revision to Section 401.3.

410: The materials used in the repair of a plumbing system must comply with the provisions of the IPC in order to insure a safe and sanitary repair installation.

Cost Impact: None

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

EB20-04/05

407.1.1, 407.1.1.1, 407.1.1.2, Table 407.1.1.2, 407.1.1.3

Proponent: Michael Valley, Magnusson Klemencic Associates, Seattle, WA, representing NCSEA/Structural Engineers Association of Washington

Revise as follows:

407.1.1 Seismic evaluation and design. Seismic evaluation and design of an existing building and its components shall be based on the ~~assumed forces related to the response of the structure to earthquake motions~~ following criteria.

407.1.1.1 Evaluation and design procedures. The seismic evaluation and design ~~of an existing building~~ shall be based on the procedures specified in the *International Building Code*, ~~Appendix A of this code (GSREB),~~ ASCE 31 or FEMA 356. The procedures contained in Appendix A of this code shall be permitted to be used as specified in Section 407.1.1.3.

407.1.1.2 (Supp) IBC level seismic forces. When seismic forces are required to meet the *International Building Code* level, they shall be ~~based on~~ one of the following:

1. 100 percent of the values in the *International Building Code* ~~or FEMA 356~~. ~~Where the *International Building Code* is used,~~ The *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor specified for structural systems classified as "Ordinary" in accordance with Table 1617.6.2 unless it can be demonstrated that the structural system satisfies the proportioning and detailing requirements for systems classified as "Intermediate" or "Special".
2. Those associated with the BSE-1 and BSE-2 Earthquake Hazard Levels defined in FEMA 356. Where FEMA 356 is used, ~~the FEMA 356 Basic Safety Objective (BSO) shall be used for buildings in Seismic Use Group I. For buildings in other Seismic Use Groups the applicable FEMA 356 performance levels shown in Table 407.1.1.2 for BSE-1 and BSE-2 Earthquake Hazard Levels shall be used~~ the corresponding performance levels shall be those shown in Table 407.1.1.2.

TABLE 407.1.1.2
~~IBC SEISMIC USE GROUP EQUIVALENT TO~~
FEMA 356 and ASCE 31 PERFORMANCE LEVELS[a]

~~SEISMIC USE GROUP~~ OCCUPANCY CATEGORY (BASED ON IBC TABLE 1604.5)	PERFORMANCE LEVEL ~~S OF~~ FOR USE WITH ASCE 31 AND WITH FEMA 356 BSE-1 EARTHQUAKE HAZARD LEVEL	PERFORMANCE LEVEL ~~S OF~~ FOR USE WITH FEMA 356 BSE-2 EARTHQUAKE HAZARD LEVEL
I	Life Safety (LS)	Collapse Prevention (CP)
II	Life Safety (LS)	Collapse Prevention (CP
III	Note ~~b~~ a	Note ~~b~~ a
IV	Immediate Occupancy (IO)	Life Safety (LS)

~~a. The charging provisions for Seismic Use Group equivalents to ASCE 31 and FEMA 356 BSE-1 for reduced *International Building Code* level seismic forces are located in Section 407.1.1.3.~~

~~b.~~ a. Performance Levels for ~~Seismic Use Group~~ Occupancy Category III shall be taken as halfway between the performance levels specified for ~~Seismic Use Groups~~ Occupancy Category II and Occupancy Category IV.

407.1.1.3 (Supp) Reduced IBC level seismic forces. When seismic forces are permitted to meet reduced *International Building Code* levels, they shall be ~~based on~~ one of the following:

1. 75 percent of the ~~assumed~~ forces prescribed in the *International Building Code*~~,~~ . ~~applicable chapters in Appendix A of this code (GSREB), the applicable performance level of ASCE 31 as shown in Table 407.1.1.2, or the applicable performance level for the BSE-1 Earthquake Hazard Level of FEMA 356 shown in Table 407.1.1.2. Where the *International Building Code* is used,~~ The *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor as specified in Section 407.1.1.2 of this code.
2. In accordance with the applicable chapters in Appendix A of this code as specified in Items 2.1 through 2.5 below. Structures or portions of structures that comply with the requirements of the applicable chapter in Appendix A shall be deemed to comply with the requirements for reduced *International Building Code* force levels.
   2.1. The seismic evaluation and design of unreinforced masonry bearing wall buildings in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A1.
   2.2. Seismic evaluation and design of the wall anchorage system in reinforced concrete and reinforced masonry wall buildings with flexible diaphragms in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A2.
   2.3. Seismic evaluation and design of cripple walls and sill plate anchorage in residential buildings of light-frame wood construction in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A3.
   2.4. Seismic evaluation and design of soft, weak, or open-front wall conditions in multiunit residential buildings of wood construction in Occupancy Category I or II are permitted to be based on the procedures specified in Appendix Chapter A4.
   2.5. Seismic evaluation and design of concrete buildings and concrete with masonry infill buildings in all Occupancy Categories are permitted to be based on the procedures specified in Appendix Chapter A5.
3. In accordance with ASCE 31 based on the applicable performance level as shown in Table 407.1.1.2.
4. Those associated with the BSE-1 Earthquake Hazard Level defined in FEMA 356 and the performance level as shown in Table 407.1.1.2.

Reason: The proposal is editorial, but necessary for consistent interpretation and enforcement as well as clarification of the scoping for the referenced documents.

1. Replace Seismic Use Group with Category for consistency with IBC Table 1604.5. (ASCE 7-05 uses Occupancy Category rather than SUG.)
2. Eliminate use of term “assumed seismic forces” because a) “prescribed” is the preferred term, b) FEMA 356 and other criteria are primarily displacement based, not force based. Principal change is to Chapter 4, but similar changes should also be made to section 202.
3. Removal of commentary language, as in 407.1.1, or repetitive language, as in 407.1.1.2.
4. Clarification of the scope of the Appendix (GSREB). The GSREB only applies to a fairly limited number of building types and in some cases only portions of a building. This scoping should be indicated in the IEBC rather than the GSREB itself in order to reduce the effort in searching through the entire GSREB for the relevant section. The additions to Section 407.1.1.3 simply state the scoping and applicability from the GSREB chapters into the text of the IEBC. GSREB Chapters A1 through A4 are only applicable to Occupancy Category I and II buildings, and this is further clarified in this section.

Since use of the GSREB is not permitted for full IBC forces (Section 407.1.1.2), the only appropriate place to reference it is in the section for which it applies (Section 407.1.1.3, reduced IBC level seismic forces), and this is also clarified by the proposed revisions.

The largest portion of this change proposal involves clarifying the seismic evaluation and upgrade scope of GSREB chapters A2, A3, and

A4 relative to the three other documents referenced in this section (IBC, FEMA 356, and ASCE 31). Seismic evaluation and design using these three documents considers the entire load path of the seismic-force-resisting system. As scoped in Section 407.1.1.3, they are generally intended to provide some measure of overall structural life safety performance (with at least some consistency). ASCE 31 and FEMA 356 contain procedures for reviewing the entire seismic load path as does the IBC (using 75% of the required seismic forces). Chapters A1 and A5 are at least somewhat global in nature, with procedures and requirements for addressing the entire load path of the seismic-force-resisting system (depending on Seismic Design Category in some cases).

GSREB Chapters A2, A3, and A4, however, are considered to be "hazard reduction" procedures which consider only the features of the seismic load path that are potentially the most hazardous relative to seismic performance. All three chapters specifically exclude the review of some of the elements of the seismic-force-resisting system (regardless of seismic design category). While these chapters are appropriate for addressing and mitigating what is in most cases the primary seismic deficiency in these types of buildings, they may fail to address other potential deficiencies in the seismic-force-resisting system. Therefore, the IEBC scoping should indicate the specific items addressed by these chapters so that design professionals, building officials, and building owners could be made aware of the fact that there could be other seismic deficiencies not addressed by these chapters of the GSREB.

Cost Impact: None

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

EB21-04/05

407.1.1, 407.1.1.1, 407.1.1.2, 407.1.1.3, 407.1.2, 407.3.2.1, 407.3.2.1, 407.3.2.1.1

Proponent: James N. Bartl/James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh NC Inspections

Revise as follows:

407.3.2 Substantial structural damage. Buildings that have sustained substantial structural damage shall comply with this section.

407.3.2.1 Engineering evaluation and analysis. An engineering evaluation and analysis that establishes the structural adequacy of the damaged building shall be prepared by a registered design professional and submitted to the code official. The evaluation and analysis may assume that all damaged structural elements and systems have their original strength and stiffness. The seismic analysis shall be based on one of the procedures specified in Section ~~407.1.1~~ 407.3.2.1.1.

~~**407.1.1**~~ **407.3.2.1.1 Seismic evaluation and design.** Seismic evaluation and design of an existing building and its components shall be based on the assumed forces related to the response of the structure to earthquake motions.

~~**407.1.1.1**~~ **407.3.2.1.1.1 Evaluation and design procedures.** The seismic evaluation and design of an existing building shall be based on the procedures specified in the *International Building Code*, Appendix A of this code (GSREB), ASCE 31 or FEMA 356.

~~**407.1.1.2 (Supp)**~~ **407.3.2.1.1.2 IBC level seismic forces.** When seismic forces are required to meet the *International Building Code* level, they shall be based on 100 percent of the values in the *International Building Code* or FEMA 356. Where the *International Building Code* is used, the *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor specified for structural systems classified as "Ordinary" in accordance with Table 1617.6.2 unless it can be demonstrated that the structural system satisfies the proportioning and detailing requirements for systems classified as "Intermediate" or "Special". Where FEMA 356 is used, the FEMA 356 Basic Safety Objective (BSO) shall be used for buildings in Seismic Use Group I. For buildings in other Seismic Use Groups the applicable FEMA 356 performance levels shown in Table 407.3.2.1.1.2 for BSE-1 and BSE-2 Earthquake Hazard Levels shall be used.

~~TABLE 407.1.1.2~~ TABLE 407.3.2.1.1.2
IBC SEISMIC USE GROUP EQUIVALENTS TO FEMA 356 AND ASCE 31 PERFORMANCE LEVELS[a]

(No change to portions of table and notes not shown)

~~**407.1.1.3 (Supp)**~~ **407.3.2.1.1.3 Reduced IBC level seismic forces.** When seismic forces are permitted to meet reduced *International Building Code* levels, they shall be based on 75 percent of the assumed forces prescribed in the *International Building Code*, applicable chapters in Appendix A of this code (GSREB), the applicable performance level of ASCE 31 as shown in Table 407.3.2.1.1.2, or the applicable performance level for the BSE-1 Earthquake Hazard Level of FEMA 356 shown in Table 407.3.2.1.1.2. Where the *International Building Code* is used, the *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor as specified in Section 407.3.2.1.1.2 of this code.

~~**407.1.2**~~ **407.3.2.1.2 Wind design.** Wind design of existing buildings shall be based on the procedures specified in the *International Building Code* or International *Residential Code as applicable*.

~~**407.3.2.1.1**~~ **407.3.2.1.3 Extent of repair.** The evaluation and analysis shall demonstrate that the building, once repaired, complies with the wind and seismic provisions of the *International Building Code*.

Exception: The seismic design level for the repair design shall be the higher of the Building Code in effect at the time of original construction or reduced

International Building Code level seismic forces as specified in Section ~~407.1.1.3~~ 407.3.2.1.1.3.

Reason: The proposal is to move the requirements for *Seismic evaluation and design* 407.1.1 through 407.1.2 *Wind* to align directly after Section 407.3.2.1 *Engineering evaluation and analysis*. The seismic evaluation should only be a requirement when a building has sustained substantial structural damage as defined in Chapter 2. As this section now stands it essentially states that all "structurally damaged buildings" would require a seismic analysis regardless of the extent of structural damage.

Cost Impact: None

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

EB22-04/05
407.2

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Delete without substitution:

~~**407.2 Reduction of strength.** Repairs shall not reduce the structural strength or stability of the building, structure, or any individual member thereof.~~

~~**Exception:** Such reduction shall be allowed provided the capacity is not reduced to below the *International Building Code* levels.~~

(Renumber subsequent section)

Reason: Section 407.2 is not necessary because the subject of conformance to current code is already addressed by preferred language in section 401.3. The language of 401.3 is preferred because it addresses the issue of code conformance in more general and more enforceable terms, whereas specific reference to "strength" and "stability" in the current 407.2 are subject to varying interpretation. Further, a prohibition on strength "reduction" can have the unintended effect of prohibiting certain effective structural rehabilitation strategies.
Cost Impact: None

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

EB23-04/05
407.3.2.1

Proponent: James N. Bartl/James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh NC Inspections

Revise as follows:

407.3.2.1 Engineering evaluation and analysis. An engineering evaluation and analysis that establishes the structural adequacy of the damaged building shall be prepared by a registered design professional and submitted to the code official. ~~The evaluation and analysis may assume that all damaged structural elements and systems have their original strength and stiffness.~~ The seismic analysis shall be based on one of the procedures specified in Section 407.1.1.

Reason: The assumption that all damaged structural elements and systems have their original strength and stiffness is potentially hazardous and unsafe. Each damaged element and system of structural components must be evaluated as to structural integrity and fitness for continued use.

Cost Impact:

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

EB24-04/05
407.3.2.1.1

Proponent: James N. Bartl/James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh NC Inspections

Revise as follows:

407.3.2.1.1 Extent of repair. The evaluation and analysis shall demonstrate that the building, once repaired, complies with the wind and seismic provisions of the *International Building Code*.

Exceptions:

1. The seismic design level for the repair design shall be the higher of the Building Code in effect at the time of original construction or reduced *International Building Code* level seismic forces as specified in Section 407.1.1.3.
2. The wind design level for the repair shall be as required by the building code in effect at the time of original construction unless the damage was caused by wind, in which case the design level shall be as required by the code in effect at the time of original construction or as required by the *International Building Code*, whichever is greater

Reason: In determining the degree of compliance for repairs to buildings that have sustained substantial structural damage it is important to determine if wind forces caused the structural damage. This analysis is established in section 407.3.2.1. Exception #1 allows

the seismic design level for the repair design to be the higher of the Building Code in effect at the time of original construction or reduced level IBC seismic forces. It is reasonable to allow the repair design of wind damage to be the higher of the Building Code in effect at the time of original construction or the *International Building Code*.

Cost Impact: None

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

EB25-04/05
407.3.4

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Delete without substitution:

~~**407.3.4 Other uncovered structural elements.** Where in the course of conducting repairs other uncovered structural elements are found to be unsound or otherwise structurally deficient, such elements shall be made to conform to the requirements of Section 407.3.2.1.1.~~

(Renumber subsequent section)

Reason:
1. The terms "unsound or otherwise structurally deficient" are not defined, and the provision is therefore unenforceable.
2. "Dangerous" conditions are already addressed elsewhere (115 and 407.3.3).
3. Reference to 407.3.2.1.1 does not make sense, because 407.3.2.1.1 does not account for "unsoundness" or "deficiency" with respect to gravity loads, and because it is potentially inconsistent with 407.3.3.
4. The provision is inconsistent with Chapters 5 through 7, which do not make specific mention of elements "uncovered" in the course of alteration. The inconsistency could wrongly suggest that deficiencies or damage found in alteration projects need not be addressed.
5. If "unsound or otherwise structurally deficient" is construed to mean "damaged," then the provision is unnecessary because damage is already covered by 407.3 in general and by 105.6 regarding "incomplete information." If it is construed to mean "noncompliant," then the provision is potentially inconsistent with 115.5, 407.3.3, and 101.4.

Cost Impact: None

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

EB26-04/05
407.3.6 (New)

Proponent: Gary R. Searer, S.E., Wiss, Janey, Elstner Associates, Inc., Emeryville, CA, representing Gary R. Searer, S.E., and James A. Mahaney, S.E.

Add new text as follows:

407.3.6 Financial limits. The supplemental costs of adding new structural frame members or strengthening or upgrading existing structural frame members to comply with current code as required by Section 407.3 need not exceed 100% of the costs to structurally repair these members to meet the code under which the building was originally permitted.

Reason: The proposed change is necessary to maintain the same overall philosophy as Sections 404.1, 405.1, 406.1, and 506.2 and to avoid problems associated with a potentially massive unfunded mandate.

After the 1989 Loma Prieta earthquake, the City of Oakland adopted a damage "trigger" that mandated significantly damaged buildings be upgraded as part of the repair. This requirement caused a large number of damaged buildings within Oakland to remain vacant for over a decade because property owners were unwilling or unable to pay for the massive upgrades. The ordinance significantly and adversely affected Oakland, arguably caused a loss of property values, resulted in an increase in poverty and unemployment, and created a downtown filled with numerous damaged (and unrepaired) and vacant buildings.

Early versions of the Uniform Building Code (UBC) contained a "trigger" for upgrading buildings. However, this trigger was rescinded in more recent versions of the UBC because ICBO concluded that many owners were simply opting to not repair their buildings (or perhaps to repair their buildings illegally without permits), rather than repair their buildings and trigger full upgrades (ICBO, 1998). The existing wording in the IEBC goes against every code in existence prior to the IEBC. The SBC, BOCA, the UBC, and the IBC all allowed repairs to be performed without triggering upgrades. To so drastically change the philosophy behind repairs must inevitably have significant repercussions in the private sector (as existing buildings are devalued because of their tendency to trigger massive upgrades during repairs) and in the public sector (as municipalities are faced with an unfunded mandate that can trigger a massive upgrade of an existing building). To our knowledge, these effects have not been studied or quantified in any way by the ICC.

Just like Exception 1 in Section 506.2, this section imposes reasonable limits on the costs of upgrades that can be triggered by Chapter 4. Instead, a reasonable amount of money can be spent to upgrade certain elements while other elements are returned to their original condition (which presumably provided satisfactory performance for a long period of time).

The ICC does not want to find itself in a position of mandating massive upgrades as a result of relatively small repairs. As ICBO found out when a trigger was added to the UBC, such a requirement triggers deterioration of the building stock instead of encouraging repair (ICBO, 1998). An owner faced with a $10,000 repair will complain if the repair triggers an additional $2,000 in structural upgrades but will likely perform the required repairs and upgrades; however, an owner is much more likely to not perform a repair or to perform an unpermitted repair if the $10,000 repair triggers a $200,000 upgrade.

If the intent of Chapter 4 is to trigger a modest amount of upgrades in association with a repair, then a vote in favor for this proposed change should be made. If the intent of Chapter 4 is to trigger large upgrades of the existing U.S. building stock that historically has

performed quite well, then the IEBC is likely to have significant adverse consequences in the public and private sectors.

This proposal caps the mandated upgrades at 100% of the cost of the repairs. The decision of where to spend money allocated to upgrades will be decided between the owner, the engineer, and the building official.

Cost Impact: None

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

EB27-04/05
407.3

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Delete and substitute as follows:

~~**407.3 Damaged buildings.** Damaged buildings shall be repaired in accordance with this section.~~

~~**407.3.1 New structural frame members.** New structural frame members used in the repair of damaged buildings, including anchorage and connections, shall comply with the *International Building Code*.~~

~~**Exception:** For the design of new structural frame members connected to existing structural frame members, the use of reduced *International Building Code* level seismic forces as specified in Section 407.1.1.3 shall be permitted.~~

~~**407.3.2 Substantial structural damage.** Buildings that have sustained substantial structural damage shall comply with this section.~~

~~**407.3.2.1 Engineering evaluation and analysis.** An engineering evaluation and analysis that establishes the structural adequacy of the damaged building shall be prepared by a registered design professional and submitted to the code official. The evaluation and analysis may assume that all damaged structural elements and systems have their original strength and stiffness. The seismic analysis shall be based on one of the procedures specified in Section 407.1.1.~~

~~**407.3.2.1.1 Extent of repair.** The evaluation and analysis shall demonstrate that the building, once repaired, complies with the wind and seismic provisions of the *International Building Code*.~~

~~**Exception:** The seismic design level for the repair design shall be the higher of the Building Code in effect at the time of original construction or reduced *International Building Code* level seismic forces as specified in Section 407.1.1.3.~~

~~**407.3.3 Below substantial structural damage.** Repairs to buildings damaged to a level below the substantial structural damage level as defined in Section 202 shall be allowed to be made with the materials, methods, and strengths in existence prior to the damage unless such existing conditions are dangerous as defined in Chapter 2. New structural frame members as defined in Chapter 2 shall comply with Section 407.3.1.~~

~~**407.3.4 Other uncovered structural elements.** Where in the course of conducting repairs other uncovered structural elements are found to be unsound or otherwise structurally deficient, such elements shall be made to conform to the requirements of Section 407.3.2.1.1.~~

~~**407.3.5 Flood hazard areas.** In flood hazard areas, damaged buildings that sustain substantial damage shall be brought into compliance with Section 1612 of the *International Building Code*.~~

407.3 Repairs to damaged buildings. Repairs to damaged buildings shall comply with this section.

407.3.1 Dangerous conditions. Regardless of the extent of structural damage, dangerous conditions shall be eliminated.

407.3.2 Substantial structural damage to vertical elements of the lateral–force-resisting system. A building that has sustained substantial structural damage to the vertical elements of its lateral force resisting system shall be evaluated and repaired in accordance with the applicable provisions of Section 407.3.2.1 through 407.3.2.3.

407.3.2.1 Evaluation. The building shall be evaluated by a registered design professional, and the evaluation findings shall be submitted to the code official. The evaluation shall establish whether the damaged building, if repaired to its pre-damage state, would comply with the provisions of the *International Building Code*. Wind forces for this evaluation shall be those prescribed in the *International Building Code*. Seismic forces for this evaluation shall be the reduced level seismic forces specified in *Code* Section 407.1.1.3.

407.3.2.2 Extent of repair for compliant buildings. If the evaluation establishes compliance of the pre-damage building in accordance with Section 407.3.2.1, then repairs shall be permitted that restore the building to its

pre-damage state, using materials and strengths that existed prior to the damage.

407.3.2.3 Extent of repair for non-compliant buildings. If the evaluation does not establish compliance of the pre-damage building in accordance with Section 407.3.2.1, then the building shall be rehabilitated to comply with applicable provisions of the *International Building Code* for load combinations including wind or seismic forces. Wind forces for this rehabilitation design shall comply with the applicable provisions in the *International Building Code*. Seismic forces for this rehabilitation design shall be those required for the design of the pre-damage building, but not less than the reduced level seismic forces specified in Section 407.1.1.3. New structural members and connections required by this rehabilitation design shall comply with the detailing provisions of the *International Building Code* for new buildings of similar structure, purpose, and location.

407.3.3 Substantial structural damage to vertical load-carrying components. Vertical load-carrying components that have sustained substantial structural damage shall be rehabilitated to comply with the applicable provisions for dead and live loads in the *International Building Code*. Undamaged vertical load-carrying components that receive dead or live loads from rehabilitated components shall also be rehabilitated to carry the design loads of the rehabilitation design. New structural members and connections required by this rehabilitation design shall comply with the detailing provisions of the *International Building Code* for new buildings of similar structure, purpose, and location.

407.3.3.1 Lateral force-resisting elements. Regardless of the level of damage to vertical elements of the lateral force-resisting system, if substantial structural damage to vertical load-carrying components was caused primarily by wind or seismic effects, then the building shall be evaluated in accordance with Section 407.3.2.1 and, if non-compliant, rehabilitated in accordance with Section 407.3.2.3.

407.3.4 Less than substantial structural damage. For damage less than substantial structural damage, repairs shall be allowed that restore the building to its pre-damage state, using materials and strengths that existed prior to the damage. New structural members and connections used for this repair shall comply with the detailing provisions of the *International Building Code* for new buildings of similar structure, purpose, and location.

407.3.5 Flood hazard areas. In flood hazard areas, buildings that have sustained substantial damage shall be brought into compliance with Section 1612 of the *International Building Code*.

Reason: This proposal is mostly editorial. It restates the existing provision in more logical and useful language, eliminating apparent contradictions and improving enforceability. The only substantive change is that different repair requirements are now proposed for substantial structural damage (SSD) depending on whether that damage is to the lateral system or the gravity system. This revision recognizes the two different classes of SSD defined in Section 202. Since the two SSD classes are likely to result from different damaging events (e.g. earthquake v. blast), it is reasonable to treat them differently. For example, if first story bearing walls are damaged by flood, it is reasonable to require upgrade of the first story columns to new code requirements, but it is not reasonable to require seismic upgrade of the lateral system for the full building height. By recognizing the two different classes of SSD, this revision enhances the flexibility of the code.

Another change that might be viewed as substantive is the deletion of current Section 407.3.4. That section is a redundant provision made unenforceable by the use of undefined terms and hypothetical conditions.

The most unclear current provisions are in 407.3.2. To clarify them, however, it is proposed to reorganize and rewrite all of 407.3.

The provision as written is unclear as follows:

- As written, 407.3.2.1 conflicts with 407.3.2.1.1. The former seeks "adequacy of the damaged building," while the latter requires compliance of the building "once repaired."
- As written, 407.3.2.1.1 overlaps with its Exception. The provision requires the repaired building to comply with IBC wind and seismic provisions, but the exception allows a repair design using reduced IBC seismic forces.
- 407.3.3 refers to a definition of "structural frame member" in Chapter 2 that does not exist.
- 407.3.3 makes exception for "dangerous" conditions but does not say what to do if such conditions exist. Further, the provision for pre-existing dangerous conditions is as likely to apply to 407.3.2 as 407.3.3, but there is no parallel provision in 407.3.2.
- The Exception to 407.3.1 is unclear. In the context of repair, when is a "new structural frame member" not connected to an existing structural frame member?

The proposed change reflects the provision's original intent, to wit:

1. "Dangerous" conditions must be eliminated.
2. Substantial structural damage (SSD) must be repaired.
3. SSD to the lateral system triggers evaluation of the whole building for wind and seismic loads and load combinations.
   3.1. Wind loads should be full IBC, consistent with current 407.1.2.
   3.2. Seismic loads may be reduced IBC level per current 407.1.1.3, but may not be less than the original design forces. (In the end, the 2-part criterion is not needed because either one triggers the same rehab.)
4. If the building with lateral system SSD, hypothetically repaired to its pre-damage condition, complies per step 3, then it need only be repaired to that pre-damage condition. Otherwise, it must be rehabilitated to meet full IBC wind and reduced IBC seismic force levels.
5. SSD to the gravity system must be repaired. Any columns or bearing walls contributing to the SSD must be rehabilitated to resist current code gravity loads, as must other elements on the load path. If the SSD is due to a lateral event (wind or earthquake), then the lateral system may be suspect and should also be checked even if not apparently damaged.
6. New members (including replacement members) must be detailed per current code.

Cost Impact: None

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

EB28-04/05
407

Proponent: Gary R. Searer, S.E., Wiss, Janey, Elstner Associates, Inc., Emeryville, CA, representing himself

Delete and substitute as follows:

SECTION 407
STRUCTURAL

~~**407.1 General.** Repairs of structural elements shall comply with this section.~~

~~**407.1 .1 Seismic evaluation and design.** Seismic evaluation and design of an existing building and its components shall be based on the assumed forces related to the response of the structure to earthquake motions.~~

~~**407.7.1.1 Evaluation and design procedures.** The seismic evaluation and design of an existing building shall be based on the procedures specified in the *International Building Code*, Appendix A of this code (GSREB), ASCE 31 or FEMA 356.~~

~~**407.1.1.2 (Supp) IBC level seismic forces.** When seismic forces are required to meet the *International Building Code* level, they shall be based on 100 percent of the values in the *International Building Code* or FEMA 356. Where the *International Building Code* is used, the *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor specified for structural systems classified as "Ordinary" in accordance with Table 1617.6.2 unless it can be demonstrated that the structural system satisfies the proportioning and detailing requirements for systems classified as "Intermediate" or "Special". Where FEMA 356 is used, the FEMA 356 Basic Safety Objective (BSO) shall be used for buildings in Seismic Use Group I. For buildings in other Seismic Use Groups the applicable FEMA 356 performance levels shown in Table 407.1.1.2 for BSE-1 and BSE-2 Earthquake Hazard Levels shall be used.~~

~~**TABLE 407.1.1.2**~~
~~**IBC SEISMIC USE GROUP EQUIVALENTS TO FEMA 356 and ASCE 31 PERFORMANCE LEVELS[a]**~~

(Delete table and footnotes in their entirety)

~~**407.1.1.3 (Supp) Reduced IBC level seismic forces.** When seismic forces are permitted to meet reduced *International Building Code* levels, they shall be based on 75 percent of the assumed forces prescribed in the *International Building Code*, applicable chapters in Appendix A of this code (GSREB), the applicable performance level of ASCE 31 as shown in Table 407.1.1.2, or the applicable performance level for the BSE-1 Earthquake Hazard Level of FEMA 356 shown in Table 407.1.1.2. Where the *International Building Code* is used, the *R* factor used for analysis in accordance with Chapter 16 of the *International Building Code* shall be the *R* factor as specified in Section 407.1.1.2 of this code.~~

~~**407.1.2 Wind design.** Wind design of existing buildings shall be based on the procedures specified in the *International Building Code* or *International Residential Code* as applicable.~~

~~**407.2 Reduction of strength.** Repairs shall not reduce the structural strength or stability of the building, structure, or any individual member thereof.~~

~~**Exception:** Such reduction shall be allowed provided the capacity is not reduced to below the *International Building Code* levels.~~

~~**407.3 Damaged buildings.** Damaged buildings shall be repaired in accordance with this section.~~

~~**407.3.1 New structural frame members.** New structural frame members used in the repair of damaged buildings, including anchorage and connections, shall comply with the *International Building Code*.~~

~~**Exception:** For the design of new structural frame members connected to existing structural frame members, the use of reduced *International Building Code* level seismic forces as specified in Section 407.1.1.3 shall be permitted.~~

~~**407.3.2 Substantial structural damage.** Buildings that have sustained substantial structural damage shall comply with this section.~~

~~**407.3.2.1 Engineering evaluation and analysis.** An engineering evaluation and analysis that establishes the structural adequacy of the damaged building shall be prepared by a registered design professional and submitted to the code official. The evaluation and analysis may assume that all damaged structural elements and systems have their original strength and stiffness. The seismic analysis shall be based on one of the procedures specified in Section 407.1.1.~~

~~**407.3.2.1.1 Extent of repair.** The evaluation and analysis shall demonstrate that the building, once repaired, complies~~

~~with the wind and seismic provisions of the *International Building Code*.~~

~~**Exception:** The seismic design level for the repair design shall be the higher of the Building Code in effect at the time of original construction or reduced *International Building Code* level seismic forces as specified in Section 407.1.1.3.~~

~~**407.3.3 Below substantial structural damage.** Repairs to buildings damaged to a level below the substantial structural damage level as defined in Section 202 shall be allowed to be made with the materials, methods, and strengths in existence prior to the damage unless such existing conditions are dangerous as defined in Chapter 2. New structural frame members as defined in Chapter 2 shall comply with Section 407.3.1.'~~

~~**407.3.4 Other uncovered structural elements.** Where in the course of conducting repairs other uncovered structural elements are found to be unsound or otherwise structurally deficient, such elements shall be made to conform to the requirements of Section 407.3.2.1.1.~~

~~**407.3.5 Flood hazard areas.** In flood hazard areas, damaged buildings that sustain substantial damage shall be brought into compliance with Section 1612 of the *International Building Code*.~~

407.1 General. Repairs shall be done in a manner that maintains the level of protection provided for structural elements.

Reason: The proposed change is necessary to maintain the same overall philosophy as Sections 404.1, 405.1, and 406.1 and to avoid problems associated with a potentially massive unfunded mandate.

After the 1989 Loma Prieta earthquake, the City of Oakland adopted a damage "trigger" that mandated significantly damaged buildings be upgraded as part of the repair. This requirement caused a large number of damaged buildings within Oakland to remain vacant for over a decade because property owners were unwilling or unable to pay for the massive upgrades. The ordinance significantly and adversely affected Oakland, arguably caused a loss of property values, resulted in an increase in poverty and unemployment, and created a downtown filled with numerous damaged (and unrepaired) and vacant buildings.

Early versions of the Uniform Building Code (UBC) contained a "trigger" for upgrading buildings. However, this trigger was rescinded in more recent versions of the UBC because ICBO concluded that many owners were simply opting to not repair their buildings (or perhaps to repair their buildings illegally without permits), rather than repair their buildings and trigger full upgrades (ICBO, 1998). The existing wording in the IEBC goes against every model code in existence prior to the IEBC. The SBC, BOCA, the UBC, and the IBC all allowed repairs to be performed without triggering upgrades. To so drastically change the philosophy behind repairs must inevitably have significant repercussions in the private sector (as existing buildings are devalued because of their tendency to trigger massive upgrades during repairs) and in the public sector (as municipalities are faced with an unfunded mandate that can trigger a massive upgrade of an existing building). To our knowledge, these effects have not been studied or quantified in any way by the ICC.

The ICC does not want to find itself in a position of mandating massive upgrades as a result of repairs. As ICBO found out when a trigger was added to the UBC, such a requirement triggers deterioration of the building stock instead of encouraging repair (ICBO, 1998). An owner faced with a $10,000 repair will complain if the repair triggers an additional $2,000 in structural upgrades but will likely perform the required repairs and upgrades; however, an owner is much more likely to not perform a repair or to perform an unpermitted repair if the $10,000 repair triggers a $200,000 upgrade.

Cost Impact: None

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

EB29-04/05

411 (New), 508 (New), 611 (New), 708 (New), 906.1

Proponent: Vickie Lovell, InterCode, Incorporated, Delray Beach, FL, representing Association of Industrial Metallized Coaters and Laminators - Window Film Committee

1. Add new sections as follows:

SECTION 411
ENERGY CONSERVATION

411.1 Minimum requirements. Repairs to existing buildings or structures are permitted without requiring the entire building or structure comply with the energy requirements of the *International Energy Conservation Code* or *International Residential Code*. The repairs shall conform to the energy requirements of the *International Energy Conservation Code* or *International Residential Code* as they relate to new construction only.

SECTION 508
ENERGY CONSERVATION

508.1 Minimum requirements. Level 1 alterations to existing buildings or structures are permitted without requiring the entire building or structure comply with the energy requirements of the *International Energy Conservation Code* or *International Residential Code*. The alterations shall conform to the energy requirements of the *International Energy Conservation Code* or *International Residential Code* as they relate to new construction only.

SECTION 611
ENERGY CONSERVATION

611.1 Minimum requirements. Level 2 alterations to existing buildings or structures are permitted without requiring the entire building or structure comply with the energy requirements of the *International Energy Conservation Code* or *International Residential Code*. The alterations shall conform to the energy requirements of the

International Energy Conservation Code or *International Residential Code* as they relate to new construction only.

SECTION 708
ENERGY CONSERVATION

708.1 Minimum requirements. Level 3 alterations to existing buildings or structures are permitted without requiring the entire building or structure comply with the energy requirements of the *International Energy Conservation Code* or *International Residential Code*. The alterations shall conform to the energy requirements of the *International Energy Conservation Code* or *International Residential Code* as they relate to new construction only.

2. Revise as follows:

906.1 Minimum requirements. Additions to existing buildings or structures ~~may be made to such buildings or structures~~ are permitted without ~~making~~ requiring the entire building or structure comply with the energy requirements of the *International Energy Conservation Code* or the *International Residential Code*. The addition shall conform to the energy requirements of the *International Energy Conservation Code* or the *International Residential Code* as they relate to new construction only.

Reason: Two sections within the ICC International Energy Conservation Code reference the International Existing Building Code (IECC) for repairs, alterations and additions. The IEBC currently does not contain requirements for compliance with the IECC or IRC in Chapter 4 – Repairs, Chapter 5 – Alterations – Level 1, Chapter 6 – Alternations Level 2 and Chapter 7 – Alternations Level 3. Language does exist in Chapter 9 – Additions but only references the IECC and does not include the use of the IRC for additions. Because there are limited energy provisions within the IEBC, the current structure of the code will confuse the end user and enforcement personnel as they try to use the IEBC as an option to comply with the energy provisions of the IECC and IRC.

Additions, alternations and repairs make up a large segment of the construction market and are currently covered under the applicable provisions within the IECC and IRC. This five part code change is designed to direct the user to the applicable energy code for each type of construction as defined under Chapter 3 of the IEBC. This language is currently only contained in Chapter 9 of the IEBC. The language proposed for this code change is also consistent with language in the IECC and only requires features which are repaired, altered or added to comply with the energy code.

Section 906.1 references only the International Energy Conservation Code and not the International Residential Code. The current language eliminates the ability for residential builders to use Chapter 11 of the International Residential Code to demonstrate compliance with the energy code for additions. The current code language goes against the sole purpose of the creation of the IRC as a standalone building code for one- and two-family residential and townhomes. This proposed code change would allow residential builders to use the IRC to meet the requirements of the energy code for additions.

Cost Impact: None

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

EB30-04/05
502, 505, 506

Proponent: Greg Wheeler, C.B.O., Chair, ICC Ad Hoc Committee on Existing Buildings

1. Delete section without substitution:

~~**SECTION 502**~~
~~**SPECIAL USE AND OCCUPANCY**~~

~~**502.1 General.** Alteration of buildings classified as special use and occupancy as described in the *International Building Code* shall comply with the requirements of Section 501.1 and the scoping provisions of Chapter 1 where applicable.~~

2. Revise as follows:

SECTION 505
MEANS OF EGRESS

505.1 General. ~~Means of egress for buildings undergoing alteration shall comply with the requirements of Section 501.1 and the scoping provisions of Chapter 1 where applicable.~~ Repairs shall be done in a manner that maintains the level of protection provided for the means of egress.

SECTION 506
ACCESSIBILITY

506.1 General. A building, facility, or element that is altered shall comply with the applicable provisions in Sections 506.1.1 through 506.1.12, Chapter 11 of the *International Building 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.

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 506.2.
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.

Reason: The ICC Board established the Ad Hoc Committee on Existing Buildings to evaluate and further refine the IEBC in response to issues raised by the membership over the past couple of code development cycles. The key issues being: the need for more options to address the use and re-use of existing buildings, including the use of the current provisions in the IBC; how to better coordinate the IEBC with the other I-Codes; a review and clarification of specific provisions in the current IEBC; and the mechanism by which code development maintenance and the necessary coordination of provisions can best be achieved.

This proposal focuses on the clarification of the alteration level 1 provisions of Chapter 5 of the IEBC. A section-by-section discussion follows:

502: This section serves no purpose. All buildings, regardless of the type must comply with the provisions of Chapter 5.

505.1: This text includes circular logic, referring back to Section 501.1.

506.1: The proposed revision to this section mirrors Section 3409.2 of the IBC, reinforcing the need for not only the alteration to comply with the applicable accessibility provisions but for the space to be maintained accessible.

Cost Impact: None

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

EB31-04/05
506, 606

Proponent: James N. Bartl, AIA,, James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh Inspections, NC

1. Add new text as follows:

SECTION 506
ACCESSIBILITY

506.1 General. Buildings required by Chapter 11 of the *International Building Code* to be accessible, shall comply with the applicable provisions of Sections 506.1.1 through 506.1.3, unless the requirements of the *International Building Code* Chapter 34 have been met. Where compliance with this section is technically infeasible, the alteration shall provide access to the maximum extent technically feasible.

506.1.1 Water closet compartments. Where water closet compartments are being relocated or installed, an accessible water closet compartment complying with the International Building Code shall be provided.

Exception: Where the installation of the water closet compartment would require the relocation of the related water closet.

506.1.2 Plumbing Fixtures. Where plumbing fixtures are replaced, the height of the replacement fixtures shall comply with the accessibility requirements of the *International Building Code.*

506.1.3 Door operation. Where door operating hardware is replaced, the replacement hardware and hardware installation shall comply with the *International Building Code.*

506.2 Extent of application. An alteration of an existing element, space, or area of a building or facility shall not impose a requirement for greater accessibility than that which would be required for new construction. Alterations shall not reduce or have the effect of reducing accessibility of a building, portion of a building, or facility.

2. Delete without substitution:

SECTION 606
ACCESSIBILITY

~~**606.1 General.** A building, facility, or element that is altered shall comply with Section 506.~~

~~**606.3 Dwelling units and sleeping units.** Where Group I-1, I-2, I-3, R-1, R-2, or R-4 dwelling units or sleeping units are being added, the requirements of Section 1107 of the International Building Code for accessible units or Type A units and Chapter 9 of the International Building Code for accessible alarms apply only to the quantity of spaces being added.~~

3. Revise text as follows:

~~**506.1**~~ **606.1 General.** A building, facility, or element that is altered shall comply with the applicable provisions in Sections ~~506.1.1~~ 606.1.1 through ~~506.1.13~~ 606.1.13, Chapter 11 of the *International Building 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 ~~506.2~~ 606.2.

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.

~~**506.1.1**~~ **606.1.1 Entrances.** Where an alteration includes alterations to an entrance, and the building or facility has an accessible entrance on an accessible route, the altered entrance is not required to be accessible unless required by Section ~~506.2~~ 606.2. Signs complying with Section 1110 of the *International Building Code* shall be provided.

~~**506.1.2**~~ **606.1.2 Elevators.** Altered elements of existing elevators shall comply with ASME A17.1 and ICC A117.1. Such elements shall also be altered in elevators programmed to respond to the same hall call control as the altered elevator.

~~**506.1.3**~~ **606.1.3 Platform lifts.** Platform (wheelchair) lifts complying with ICC A117.1 and installed in accordance with ASME A18.1 shall be permitted as a component on an accessible route.

~~**506.1.4**~~ **606.1.4 Ramps.** Where steeper slopes than allowed by Section 1010.2 of the *International Building Code* are necessitated by space limitations, the slope of ramps in or providing access to existing buildings or facilities shall comply with Table ~~506.1.4~~ 606.1.4.

TABLE ~~506.1.4~~ 606.1.4
RAMPS

SLOPE	MAXIMUM RISE
Steeper than 1:10 but not steeper than 1:8	3 inches
Steeper than 1:12 but not steeper than 1:10	6 inches

For SI: 1 inch = 25.4 mm

~~**506.1.5**~~ **606.1.5 Dining areas.** An accessible route to raised or sunken dining areas or to outdoor seating areas is not required provided that the same services and decor are provided in an accessible space usable by any occupant and not restricted to use by people with a disability.

~~**506.1.6**~~ **606.1.6 Performance areas.** Where it is technically infeasible to alter performance areas to be on an accessible route, at least one of each type of performance area shall be made accessible.

~~**506.1.7**~~ **606.1.7 Jury boxes and witness stands.** In alterations, accessible wheelchair spaces are not required to be located within the defined area of raised jury boxes or witness stands and shall be permitted to be located outside these spaces where ramp or lift access poses a hazard by restricting or projecting into a required means of egress.

~~**506.1.8**~~ **606.1.8 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 of the International Building Code for Accessible or Type A units and Chapter 9 of the International Building Code for accessible alarms apply only to the quantity of the spaces being altered.

~~**506.1.9**~~ **606.1.9 Toilet rooms.** Where it is technically infeasible to alter existing toilet and bathing facilities to be accessible, an accessible unisex toilet or bathing facility is permitted. The unisex facility shall be located on the same floor and in the same area as the existing facilities.

~~**506.1.10**~~ **606.1.10 Dressing, fitting, and locker rooms.** Where it is technically infeasible to provide accessible dressing, fitting, or locker rooms at the same location as similar types of rooms, one accessible room on the same level shall be provided. Where separate sex facilities are provided, accessible rooms for each sex shall be provided. Separate sex facilities are not required where only unisex rooms are provided.

~~**506.1.11**~~ **606.1.11 Thresholds.** The maximum height of thresholds at doorways shall be 3/4 inch (19.1 mm). Such thresholds shall have beveled edges on each side.

~~**606.2**~~ **606.1.12 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.

~~**506.1.12**~~ **606.1.13 Extent of application.** An alteration of an existing element, space, or area of a building or facility shall not impose a requirement for greater accessibility than that which would be required for new construction. Alterations shall not reduce or have the effect of reducing accessibility of a building, portion of a building, or facility.

~~**506.2**~~ **606.2 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. For the purposes of complying with this section, an area of primary function shall be defined by applicable provisions of 49 CFR Part 37.43(c) or 28 CFR Part 36.403.

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.

Reason: In the IEBC, the base requirements for accessibility are in Alt-1, Section 506 Accessibility. As a point of reference, the accessibility requirements of IEBC Alt-2, Section 606.1 states that the requirements for Alt-2 shall comply with Section 506. By definition, Alt-1 is removal and replacement or covering of existing material, elements, equipment using new that serve the same purpose. We feel it is inappropriate to bring accessibility compliance requirements in at Alt-1 that would be the same for Alt-2 and Alt-3. The goal of an accessibility code should be to gradually, over a period of alterations, get the building to an accessible state. In the IEBC there is not a progression of requirements through the levels of alterations. We feel that limiting the requirements as proposed would be the first step in providing that progression.

The proposed code change to Section 606 places current Section 506 requirements into Section 606. The goal of accessibility requirements for alteration projects should be to gradually, over a period of alterations, bring a building to an accessible compliance. The appropriate time to begin this process would be at a level where walls and spaces are being reconfigured. By definition of scope, the Alt-2 Level is the time to begin accessibility requirements to a space or building. The extent of compliance at this level would be dependent upon primary function and a proportional cost of the project.

Analysis: Section 506 is referenced in Sections 706.1 and 1004.1. Is it the intent of the proponent that those references to be revised to reference Section 606?

A question would be what the intent is of the reference to Chapter 34 in Section 506.1 of this proposal. The accessibility requirements in Section 3409 are almost identical to those in Section 506 of the IEBC (and proposed to be moved to Section 606 by this proposal.)

Cost Impact: None

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

EB32-04/05
507.2.1

Proponent: Gary R. Searer, S.E., Wiss, Janney, Elstner Associates, Inc., Emeryville, CA, representing himself

Revise as follows:

507.2.1 Addition or Replacement of roofing or replacement of equipment. Where addition or replacement of roofing or replacement of equipment results in additional dead loads, structural components supporting such re-roofing or equipment shall comply with the vertical load requirements of the *International Building Code*.

Exceptions:

1. ~~Structural elements whose stress is not increased by more than 5 percent.~~ Structural elements where the additional dead load from the roofing or equipment is not increased by more than 5 percent.
2. Buildings constructed in accordance with the *International Residential Code* or the conventional construction methods of the *International Building Code* and where the additional dead load from the roofing or equipment is not increased by more than 5 percent.
3. Addition of a second layer of roofing over an existing, single layer of roofing shall be permitted.

Reason: This proposed wording is editorial in nature and closes some loopholes and clarifies the intent of the provision. As the IEBC is currently worded, addition of a second layer of roofing over an existing layer of roofing is technically neither an alteration nor an addition as defined by the IEBC. Similarly, addition of a new layer of roofing over multiple layers of roofing is technically neither an alteration nor an addition as defined by the IEBC, and thus is not controlled by the IEBC.

The proposed change clarifies that addition of roofing onto existing roofing is a Level 1 Alteration and that the common practice of allowing a second layer of roofing on top of a single existing layer of roofing is still allowed without triggering investigations and upgrades. However, the proposed change prohibits the addition of roofing if multiple layers of roofing already exist unless the increase is justified by engineering analysis.

If the reader believes that the addition of a new layer of roofing on a single existing layer of roofing is covered by the current wording in the IEBC, then this provision (as it now stands) is overly harsh since the most common structures in the U.S. (i.e. wood-framed structures) typically have roof dead loads of approximately 8 psf to 16 psf and do not conform completely to either the IRC or the conventional construction requirements of the current IBC. Thus, the addition of a second layer of roofing at 3 psf (an increase in dead load much larger than 5%) triggers a full analysis and possible upgrade of the roof framing, despite the fact that historically, addition of a second layer of roofing has been allowed by many if not most jurisdictions without undue life safety issues in the past.

The change to exception #1 is to make this exception worded similarly to exception #3 and to preclude having to calculate stress in each element in a building when a simple comparison of original and modified dead load weights and/or loads should be sufficient.

Cost Impact: None

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

EB33-04/05
507.2, 703.4

Proponent: James N. Bartl, AIA,, James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh Inspections, NC

1. Delete without substitution:

~~**507.2.2 Parapet bracing and wall anchors for reroof permits.** Unreinforced masonry bearing wall buildings classified as Seismic Design Category D, E, or F shall have parapet bracing and wall anchors installed at the roof line whenever a reroofing permit is issued. Such parapet bracing and wall anchors shall be designed in accordance with the reduced *International Building Code* level seismic forces as specified in Section 407.1.1.3 and design procedures of Section 407.1.1.1.~~

2. Add new text as follows:

703.4 Parapet bracing and wall anchors for reroof permits. Unreinforced masonry bearing wall buildings classified as Seismic Design Category D, E, or F shall have parapet bracing and wall anchors installed at the roofline whenever a reroofing permit is issued. Such parapet bracing and wall anchors shall be designed in accordance with the reduced International Building Code level seismic forces as specified in Section 407.1.1.3 and design procedures of Sections 4007.1.1.1.

Reason: The proposed change is to move this section and requirement out of Alteration Level-1 and into Alteration Level-3 where we feel it more appropriately belongs. Alt-1 by definition encompasses removal and replacement or the covering of existing materials, elements, etc. using new coverings, materials, elements. The costs associated with the bracing of unreinforced masonry bearing walls are disproportionate to the scope of an Alteration Level-1 project. Moving this requirement to the reconstruction scope of Alteration Level-3 would more adequately place it at a level of comparable rehabilitation.

Analysis: Note that in addition to moving this section from Alteration Level 1 to Alteration Level 3, the proponent is proposing to move this section from under the section dealing with structural requirements (Section 507) to under the section dealing with building elements and material (Section 703).

Cost Impact: None

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

EB34-04/05
507.2.2

Proponent: Gary R. Searer, S.E., Wiss, Janney, Elstner Associates, Inc., Emeryville, CA, representing himself

Delete without substitution:

~~**507.2.2 Parapet bracing and wall anchors for reroof permits.** Unreinforced masonry bearing wall buildings classified as Seismic Design Category D, E, or F shall have parapet bracing and wall anchors installed at the roof line whenever a reroofing permit is issued. Such parapet bracing and wall anchors shall be designed in accordance with the reduced International Building Code level seismic forces as specified in Section 407.1.1.3 and design procedures of Section 407.1.1.1.~~

Reason: As it now exists, this section is worded extremely poorly. As it is worded, the section requires either:

1. that every time an unreinforced masonry building is reroofed, anchors be added – whether they are already present or not, or
2. that a building must already have anchors present before a reroofing permit can be issued.

The term "unreinforced masonry bearing wall building" is undefined. According to Section 507.2.2 as it is currently written, a steel-framed structure with an unreinforced masonry parapet would not be required to have parapet anchors but a lightly reinforced masonry structure that does not quite meet the minimum requirements to be called "reinforced" but actually has sufficient reinforcement to provide adequate parapet stability may have to have parapet anchors installed.

This section also requires ALL parapets in unreinforced masonry bearing wall buildings to be braced, even if the h/t is adequate by all commonly accepted publications.

This is absolutely the wrong venue to require URM upgrades. A better way is a state or local ordinance that specifically spells out when and how upgrades need to take place and provides certain penalties if compliance does not occur within a given time frame. That way, the economic impacts of such an ordinance can be weighed prior to adoption and owners can be given time to plan and arrange funding for such an upgrade. Section 507.2.2 forces owners who do not have the funding to pay for such an upgrade to leave their roof unrepaired or to make unpermitted roof repairs.

The costs to add parapet and wall anchors can be substantially greater than the cost to reroof. It seems unfair for building owners to apply for a permit for a modest reroofing repair and find out that this repair triggers many times this cost in mandatory upgrades.

Cost Impact: None

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

EB35-04/05
507.3

Proponent: Gary R. Searer, S.E., Wiss, Janney, Elstner Associates, Inc., Emeryville, CA, representing himself

Delete without substitution:

~~**507.3 Roof diaphragm.** Where roofing materials are removed from more than 50 percent of the roof diaphragm of a building or section of a building where the roof diaphragm is a part of the main windforce-resisting system the integrity of the roof diaphragm shall be evaluated and if found deficient because of insufficient or deteriorated connections, such connections shall be provided or replaced.~~

Reason: As it now exists, Section 507.3 is worded extremely poorly and the intent of the section is unclear. As it is worded, where roofing materials are removed from more than 50 percent of a section of the building, an evaluation is triggered -- but the term "section" is undefined.

The term "main windforce resisting system" is undefined. Presumably, in nearly every building, the roof diaphragm is part of the "main windforce resisting system" but it is not clear if this is the intent of this provision.

The terms "integrity," "deficient," "insufficient," and "deteriorated" are undefined and unclear.

It is not clear what an "evaluation of the integrity of the diaphragm" entails. Is this a vertical load analysis, where all vertical load connections must be exposed, investigated, and analyzed? Or is this a lateral analysis of the diaphragm? Or is this both a lateral and vertical investigation and analysis?

As it is worded, the provision actually requires that if a diaphragm has deficient or insufficient connections, deficient or insufficient connections shall be added.

Cost Impact: None

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

EB36-04/05
601.1

Proponent: James N. Bartl, AIA,, James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh Inspections, NC

Revise as follows:

SECTION 601
GENERAL

601.1 Scope. Level 2 alterations as described in Section 304 shall comply with the requirements of this chapter.

Exception: Buildings in which the reconfiguration is exclusively the result of improving the ~~compliance with the~~ accessibility requirements of the building, space or tenancy shall be permitted without further requirements to accessibility. ~~Section 506.2 shall be permitted to comply with Chapter 5.~~

Reason: When the entire work area of a project is solely for the purposes of voluntary improvements to the accessibility of a building, space, or tenancy then no further accessibility requirements should be imposed on the work area.

Analysis: A question would be if this issue was addressed in Section 606 by it's reference to Section 506.

Cost Impact: None

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

EB37-04/05
603.2.1

Proponent: William Stevens, Anderson County, SC

Revise as follows:

603.2.1 Existing vertical openings. All existing interior vertical openings connecting two or more floors shall be enclosed with approved assemblies having a fire-resistance rating ~~of not less than 1 hour with approved opening protectives.~~ complying with the *International Building Code.*

Exceptions:

1. through 14. (No change to current text.)

Reason: Remembering that all published codes are a minimum standard, they should be consistent with each other. The International Building Code and NFPA 101 have consistently required all enclosed stairs over 3 stories to have a 2 hour fire-resistance rating and this should be continued because of the additional hazard to life safety with the greater number of floors a person must travel to exit the building. Also, though the statement in 603.2.1 "fire-resistance rating of not less than 1 hour" may imply the rating could be greater, it should be specifically stated in code language and not left to multiple interpretations.

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

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

EB38-04/05
602, 604, 605, 607

Proponent: Greg Wheeler, C.B.O., Chair, ICC Ad Hoc Committee on Existing Buildings

1. Delete without substitution:

~~**SECTION 602**~~
~~**SPECIAL USE AND OCCUPANCY**~~

~~**602.1 General.** Alteration of buildings classified as special use and occupancy as described in the International Building Code shall comply with the requirements of Section 601.1 and the scoping provisions of Chapter 1 where applicable.~~

2. Revise as follows:

SECTION 604
FIRE PROTECTION

604.1 Scope. The requirements of this section shall be limited to work areas 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.

604.1.1 Full floor sprinkler systems. Where a sprinkler system is installed throughout the floor, the required fire resistance rating for any corridor located on the floor shall be permitted to be reduced in accordance with the International Building Code. In order to be considered for a corridor rating reduction, such system shall provide coverage for the stairwell landing(s) serving the floor and the intermediate landing immediately below.

~~**604.2.3**~~ **604.2.2 Windowless stories.** Work areas located in a windowless story, as determined in accordance with the *International Building Code*, shall be sprinklered where the ~~work area is required to be sprinklered under the provisions of the *International Building Code* for newly constructed buildings and the~~ building has a sufficient municipal water supply available to the floor without installation of a new fire pump.

~~**604.2.4**~~ **604.2.3 Other required suppression systems.** In buildings and areas listed in Table 903.2.13 of the *International Building Code*, work areas that include exits or corridors shared by more than one tenant or that serve ~~serving~~ an occupant load greater than 30 shall be provided with automatic sprinkler protection under the following conditions:

1. The work area is required to be provided with automatic sprinkler protection in accordance with the *International Building Code* applicable to new construction; and
2. The building has sufficient municipal water supply for design of a fire sprinkler system available to the floor without installation of a new fire pump.

SECTION 605
MEANS OF EGRESS

605.2 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 ~~*International Building Code*~~ 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.

605.3.1.2 Fire escapes required. When more than one exit is required, an existing or newly constructed fire escape complying with Section 605.3.1.2.1 shall be accepted as providing one of the required means of egress.

605.3.1.2.1 Fire escape access and details. Fire escapes shall comply with all of the following requirements:

1. Occupants shall have unobstructed access to the fire escape without having to pass through a room subject to locking.
2. Access to a new fire escape shall be through a door, except that windows shall be permitted to provide access from single dwelling units or sleeping units in Group R-1, R-2, and I-1 occupancies or to provide access from spaces having a maximum occupant load of 10 in other occupancy classifications. Windows providing access to a fire escape shall comply with the following:

   2.1 The window shall have a minimum net clear opening of 5.7 square feet or 5 square feet where located at grade.

   2.2 The minimum net clear opening height shall be 24 inches and net clear opening width shall be 20 inches.

   2.3 The bottom of the clear opening shall not be greater than 44 inches above the floor.

   2.4 The operation of the window shall comply with the operational constraints of the International Building Code.

3. Newly constructed fire escapes shall be permitted only where exterior stairs cannot be utilized because of lot lines limiting the stair size or because of the sidewalks, alleys, or roads at grade level.
4. Openings within 10 feet (3048 mm) of fire escape stairs shall be protected by fire assemblies having minimum 3/4-hour fire-resistance ratings.

   Exception: Opening protection shall not be required in buildings equipped throughout with an approved automatic sprinkler system.

5. In all buildings of Group E occupancy, up to and including the 12th grade, buildings of Group I occupancy, rooming houses, and childcare centers, ladders of any type are prohibited on fire escapes used as a required means of egress.

3. Delete and substitute as follows:

SECTION 607
STRUCTURAL

~~**607.1 General.** Where alteration work includes installation of additional equipment that is structurally supported by the building or reconfiguration of space such that portions of the building become subjected to higher gravity loads as required by Tables 1607.1 and 1607.6 of the *International Building Code*, the provisions of this section shall apply.~~

~~**607.2 Reduction of strength.** Alterations shall not reduce the structural strength or stability of the building, structure, or any individual member thereof.~~

~~**Exception:** Such reduction shall be allowed as long as the strength and the stability of the building are not reduced to below the International Building Code levels.~~

[B] 607.1 General. Additions or alterations to an existing structure shall not increase the force in any structural element by more than 5 percent, unless the increased forces on the element are still in compliance with the code for new structures, nor shall the strength of any structural element be decreased to less than that required by this code for new structures. Where repairs are made to structural elements, and uncovered structural elements are found to be unsound or otherwise structurally deficient, such elements shall be made to conform to the requirements for new structures.

[B] 607.1.1 Existing live load. Where an existing structure is altered or repaired, the minimum design loads for the structure shall be the loads applicable at the time of erection, provided that public safety is not endangered thereby.

[B] 607.1.2 Live load reduction. If the approved live load is less than required by Section 1607 of the *International Building Code*, the areas designed for the reduced live load shall be posted with the approved load. Placards shall be of an approved design.

Reason: The ICC Board established the Ad Hoc Committee on Existing Buildings to evaluate and further refine the IEBC in response to issues raised by the membership over the past couple of code development cycles. The key issues being: the need for more options to address the use and re-use of existing buildings, including the use of the current provisions in the IBC; how to better coordinate the IEBC with the other I-Codes; a review and clarification of specific provisions in the current IEBC; and the mechanism by which code development maintenance and the necessary coordination of provisions can best be achieved.

This proposal focuses on the clarification of the alterations level 2 provisions of Chapter 6 of the IEBC. A section-by-section discussion follows:

602.1: This text serves no purpose. All buildings, regardless of the type, are required to comply with Chapter 6.

604.1.1: Corridor reductions on a fully sprinklered floor provides an incentive to sprinklering the floor. This trade-off i s permitted for both sprinklers that are required as a result of the alteration as well as a voluntary installation. Once water is brought to the floor, trade offs for rated corridor doors and dampers, plus the increase in multiple leasing design options supports an owner's decision to sprinkler. To be considered a fully sprinklered floor, the sprinkler system should also include the stairwell at some point. Otherwise, the outcome could be a sprinklered building without exit stair protection.

604.2.2 and 604.2.3: Editorial clean-up of existing language.

605.2: If the code official determines the installation is compliant with the code at the time of construction, and results in a safe means of egress, it need not be held to the current IBC standards.

605.3.1.2.1: This revisions provides the necessary criteria for a window to be considered a viable fire escape, based on the provisions of Section 1025 of the IBC.

607: The proposed language will result in consistency between the IEBC and Section 3403.2 of the IBC.

Analysis: The committee needs to make its intent clear with respect to Sections 604.2.3 and 604.2.4 as it relates to this proposal and EB39-04/05.

Cost Impact: None

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

EB39-04/05
604

Proponent: Greg Rogers, Chairman, Western Code Action Committee

Revise as follows:

SECTION 604
FIRE PROTECTION

604.1 Scope. (No change to current text)

604.2 Automatic sprinkler systems. Automatic sprinkler systems shall be provided in accordance with the requirements of Sections 604.2.1 through 604.2.5. Installation requirements shall be in accordance with the *International ~~Building~~ Fire Code*.

604.2.1 (Supp) High-rise buildings. (No change to current text)

604.2.1.1 Supplemental automatic sprinkler system requirements. Where the work area on any floor exceeds 50 percent of that ~~floor~~ fire area, Section 604.2.1 shall apply to the entire floor on which the work area is located.

Exception: Tenant spaces that are entirely outside the work area.

604.2.2 Groups A, E, F-1, H, I, M, R-1, R-2, R-4, S-1, and S-2. In buildings with occupancies in Groups A, E, F-1, H, I, M, R-1, R-2, R-4, S-1, and S-2, work areas that include exits or corridors shared by more than one tenant or that serve an occupant load greater than 30 shall be provided with automatic sprinkler protection where ~~all of~~ the following conditions occur:

1. The work area is required to be provided with automatic sprinkler protection in accordance with the *International ~~Building~~ Fire Code* as applicable to new construction; and
2. The work area exceeds 50 percent of the ~~floor~~ fire area; ~~and~~
3. ~~The building has sufficient municipal water supply for design of a fire sprinkler system available to the floor without installation of a new fire pump.~~

   ~~**Exception:** Work areas in Group R occupancies three stories or less in height.~~

604.2.2.1 Mixed use. (No change to current text)

604.2.3 Windowless stories. Work located in a windowless story, as determined in accordance with the *International Building Code*, shall be sprinklered where the work area is required to be sprinklered under the provisions of the *International ~~Building~~ Fire Code* for newly constructed buildings. ~~and the building has a sufficient municipal water supply available to the floor without installation of a new fire pump.~~

604.2.4 Other required suppression systems. ~~In~~ Buildings and areas listed in Table 903.2.13 of the *International ~~Building~~ Fire Code*, ~~work areas that include exits or corridors shared by more than one tenant or serving an occupant load greater than 30~~ shall be provided with sprinkler protection ~~under the following conditions:~~ where

~~1.~~ the work area is required to be provided with automatic sprinkler protection in accordance with the *International ~~Building~~ Fire Code* applicable to new construction~~; and~~ .

2. ~~The building has sufficient municipal water supply for design of a fire sprinkler system available to the floor without installation of a new fire pump.~~

604.2.5 Supervision. Fire sprinkler systems required by this section shall be supervised in accordance with the *International Fire Code*. ~~by one of the following methods:~~

1. ~~Approved central station system in accordance with NFPA 72;~~
2. ~~Approved proprietary system in accordance with NFPA 72;~~
3. ~~Approved remote station system of the jurisdiction in accordance with NFPA 72; or~~
4. ~~Approved local alarm service that will cause the sounding of an alarm in accordance with NFPA 72.~~

~~**Exception:** Supervision is not required for the following:~~

1. ~~Underground gate valve with roadway boxes.~~
2. ~~Halogenated extinguishing systems.~~
3. ~~Carbon dioxide extinguishing systems.~~
4. ~~Dry and wet chemical extinguishing systems.~~
5. ~~Automatic sprinkler systems installed in accordance with NFPA 13R where a common supply main is used to supply both domestic and automatic sprinkler systems and a separate shutoff valve for the automatic sprinkler system is not provided.~~

604.3 Standpipes. Where the work area includes exits or corridors shared by more than one tenant and is located more than 50 feet (15 240 mm) above or below the lowest level of fire department access, a standpipe system shall be provided. Standpipes shall have an approved fire department connection with hose connections at each floor level above or below the lowest level of fire department access. Standpipe systems shall be installed in accordance with the *International ~~Building~~ Fire Code*.

~~**Exceptions:**~~

1. ~~No pump shall be required provided that the standpipes are capable of accepting delivery by fire department apparatus of a minimum of 250 gallons per minute (gpm) at 65 pounds per square inch (psi) (946 L/m at 448KPa) to the topmost floor in buildings equipped throughout with an automatic sprinkler system or a minimum of 500 gpm at 65 psi (1892 L/m at 448KPa) to the topmost floor in all other buildings. Where the standpipe terminates below the topmost floor, the standpipe shall be designed to meet (gpm/psi) (L/m/KPa) requirements of this exception for possible future extension of the standpipe.~~
2. ~~The interconnection of multiple standpipe risers shall not be required.~~

(No change to Sections 604.4 through 604.4.3)

Reason: By changing these sections it will send the user to appropriate code. If you were to send a person to the IBC it would

refer them to the IFC. However, by eliminating the reference to the IBC it makes the codes consistent and more user friendly for the jurisdictions that are adopting the family of codes. A good example of these references can be found in the fire alarm section of the IEBC which references the *International Fire Code*. To be consistent throughout the IEBC it would be appropriate to have the sprinkler section refer to the fire code.

The elimination of a fire protection system when certain items are required should not be done as an exception. There are other options when installing fire protection systems even when a fire pump is required. All of these options should be reviewed before a person eliminates a fire sprinkler system or standpipe system. Modifications can be allowed by the code official in both the fire and building code.

Analysis: The committee needs to make its intent clear with respect to Sections 604.2.3 and 604.2.4 as it relates to this proposal and EB38-04/05.

Cost Impact: None

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

EB40-04/05
605.3.1.1

Proponent: James N. Bartl, AIA,, James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh Inspections, NC

Revise as follows:

605.3.1.1 (Supp) Single-exit buildings. Only one exit is required from buildings and spaces of the following occupancies:

1. (No change to current text.)
2. Group B, F-2, and S-2 occupancies not more than two stories in height that are not greater than ~~3,000~~ 3,500 square feet per floor (~~279~~ 326 m2), provided the occupant count does not exceed 40 persons above the level of exit discharge, and when the exit access travel distance does not exceed 75 feet (22 860 mm). The minimum fire-resistance rating of the exit enclosure and of the opening protection shall be 1 hour.

3. through 10. (No change to current text.)

Reason: By raising the 2-story single exit area threshold from 3,000 sq. ft. (30 occupants in a business use) to 3,500 sq. ft. (35 occupants in same) the IEBC aligns itself with previous limits set by legacy codes. As the requirements are currently written they are the same as for new buildings. It is inappropriate to correlate IBC Chapter 10 requirements of single exits to existing buildings. In addition, IEBC Chapter 12 table 1201.6.11 evaluates exit requirements and requires compliance with Ch 1017 before the evaluation process may be undertaken. This change is vital to the continued reuse of older buildings that have undergone rehabilitation under various Existing Building Codes. If this realignment does not take place these existing buildings would be illegal without the addition of a 2nd exit.

Cost Impact: None

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

EB41-04/05
607.4.2, 707.5, 707.5.1, 707.5.2, 1707.5.3

Proponent: David Bonowitz, S.E., San Francisco, CA

Revise as follows:

607.4.2 Lateral loads. Buildings in which Level 2 alterations increase the seismic base shear by more than ~~5~~ 10 percent shall comply with the structural requirements specified in ~~Section 707.~~Sections 707.5 and 707.7. The change in base shear shall be calculated relative to conditions at the time of the most recent permitted construction or alteration of the building's seismic force resisting system.

707.5 Structural alterations. Buildings and structures undergoing structural alterations or buildings in which the seismic base shear is increased by more than ~~5~~ 10 percent because of alterations shall comply with this section. The change in base shear shall be calculated relative to conditions at the time of the most recent permitted construction or alteration of the building's seismic force resisting system.

Exceptions:

1. Buildings of Group R occupancy with no more than five dwelling units or sleeping units used solely for residential purposes that are altered based on the conventional light-frame construction methods of the *International Building Code* or in compliance with the provisions of the *International Residential Code.*
2. Where such alterations involve only the lowest story of a building and the change of occupancy provisions of Chapter 8 do not apply, only the lateral-force-resisting components in and below that story need comply with this section.

707.5.1 Evaluation and analysis. An engineering evaluation and analysis that establishes the structural adequacy of the altered structure shall be prepared by a registered design professional and submitted to the code official.

707.5.2 Substantial structural alteration. Where more than 30 percent of the total floor and roof areas of the building or structure has been or is proposed to be involved in structural alteration within a 12-month period, the evaluation and analysis shall demonstrate that the altered building or structure complies with the *International Building Code* for wind loading and with reduced *International Building Code* level seismic forces as specified in Section 407.1.1.3 for seismic loading. For seismic considerations, the analysis shall be based on one of the procedures specified in Section 407.1.1.1. The areas to be counted toward the 30 percent shall be those areas tributary to the vertical load-carrying components such as joists, beams, columns, walls, and other structural components that have been or will be removed, added, or altered, as well as areas such as mezzanines, penthouses, roof structures, and in-filled courts and shafts.

~~**Exceptions:**~~

~~1. Buildings of Group R occupancy with no more than five dwelling units or sleeping units used solely for residential purposes that are altered based on the conventional light-frame construction methods of the *International Building Code* or in compliance with the provisions of the *International Residential Code*.~~

~~2. Where such alterations involve only the lowest story of a building and the change of occupancy provisions of Chapter 8 do not apply, only the lateral-force-resisting components in and below that story need comply with this section.~~

~~**707.5.2**~~ **707.5.3 Limited structural alteration.** Where not more than 30 percent of the total floor and roof areas of the building is involved in structural alteration within a 12-month period, the evaluation and analysis shall demonstrate that the altered building or structure complies with the loads applicable at the time ~~the building was constructed.~~ of the most recent permitted construction or alteration of the seismic force resisting system.

Reason: The proposal makes two substantive changes, some technical clarifications, and several editorial clarifications.

The substantive changes are in sections 607.4.2 and 707.5. They change the trigger for seismic upgrade from a 5% change in base shear to a 10% change. While equipment weight and some gravity loads are permanent and calculable to a 5% margin, seismic loads and response characteristics of existing materials are not realistically calculable with that precision. Thus, a 5% trigger for seismic upgrade is not rational and would lead to arbitrary and excessive design and construction costs. A tight 5% trigger, especially if not justified, would also discourage other efforts to modernize and maintain existing buildings. Finally, a more rational 10% trigger would bring the IEBC in line with the latest codes and standards, as ASCE 7-05 will be changing its seismic triggers to 10%.

The technical clarifications, in 607.4.2 and 707.5, have to do with the cumulative effects of multiple alterations. Increases in potential seismic loads should be calculated relative to the original (or most recent) lateral system design. By the same token, when criteria for limited alterations apply, in 707.5.2 (proposed to be 707.5.3), the most recent permitted construction, not necessarily the original construction, should be the benchmark.

Editorially, in 607.4.2, the reference to section 707 is made more specific to those parts of 707 that consider the lateral system. In 707.5, the Exceptions are to the whole section, not just to what is currently in 707.5.1, so they are proposed to be moved up to a more appropriate place. Also, 707.5.1 is proposed to be split, and 707.5.2 renumbered, to better reflect the intended logic:

707.5.1: If the alteration exceeds the trigger in 707.5, do an analysis to demonstrate adequacy.

707.5.2: If the alteration exceeds 30%, the criteria for the analysis are IBC for wind and reduced IBC for seismic.

707.5.3: If the alteration is "limited," the criteria are from the last permitted construction.

Cost Impact: None

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

EB42-04/05
609.1, 609.2

Proponent: Guy Tomberlin, Fairfax County, Fairfax, VA, representing Virginia Plumbing and Mechanical Inspectors Association (VPMIA)

1. Revise as follows:

SECTION 609
MECHANICAL

609.1 Reconfigured, altered or converted spaces. All reconfigured spaces intended for occupancy and all spaces converted to habitable or occupiable space in any work area shall be provided with natural or mechanical ventilation in accordance with the International Mechanical Code.

~~**Exception:** Existing mechanical ventilation systems shall comply with the requirements of Section 609.2.~~

2. Delete without substitution:

~~**609.2 Altered existing systems.** In mechanically ventilated spaces, existing mechanical ventilation systems that are altered, reconfigured, or extended shall provide not less than 5 cubic feet per minute (cfm) (0.0024 m^3/s) per person of outdoor air and not less than 15 cfm (0.0071 m^3/s) of ventilation air per person; or not less than the amount of ventilation air determined by the Indoor Air Quality Procedure of ASHRAE 62.~~

(Renumber subsequent section)

Reason: The current text of the International Existing Building Code, Section 609.1, appropriately addresses ventilation requirements for occupied spaces.

ASHRAE 62 explains the rational for the prescriptive ventilation rates contained in the International Mechanical Code (IMC), that being "human comfort." ASHRAE 62 states that while CO_2 itself is not necessarily an indicator of indoor air contamination, its levels within occupied structures can indicate the density of human occupancy, and hence, the probable levels of other air contaminants associated with human occupancy. The prescribed ventilation rates in IMC mathematically maintain CO_2 levels in occupied spaces at about 700 ppm above ambient conditions, for this reason.

If IMC ventilation rates in the new building code are intended to protect the "health, safety and welfare" of the occupants of newly constructed structures, it is absolutely irrational to argue that lower ventilation rates are sufficient for those members of the general public who visit or occupy structures that have changed the "use group" under the "Existing Structures Program." Current code provisions should be used in either situation.

Cost Impact: None

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

EB43-04/05
610.1

Proponent: James N. Bartl, AIA,, James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh Inspections, NC

Revise as follows:

SECTION 610
PLUMBING

610.1 Minimum fixtures. Where the occupant load of the story is increased by more than 20 percent, plumbing fixtures for the story shall be provided in quantities specified in the International Plumbing Code based on the increased occupant load.

Exception: A single unisex toilet is allowed based on an anticipated occupancy, including employees and customers, of 25 or less under normal conditions.

Reason: The proposal takes into consideration that many jurisdictions have been using legacy codes that allow for a single, unisex toilet in existing buildings based on a square foot threshold and occupancy limits.

Cost Impact: None

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

EB44-04/05
702.1.2

Proponent: Ed Donoghue, Edward A. Donoghue Associates, Inc., Salem, NY

Revise as follows:

702.1.2 Elevators. Where there is an elevator or elevators for public use, at least one elevator serving the work area shall comply with this section. ~~Section 607.1 of the International Fire Code.~~ Existing elevators with a travel distance of 25 feet (7620 mm) or more above or below the main floor or other level of a building and intended to serve the needs of emergency personnel for fire-fighting or rescue purposes shall be provided with emergency operation in accordance with ASME A17.3. New elevators shall be provided with Phase I emergency recall operation and Phase II emergency in-car operation in accordance with ASME A17.1.

Reason: The added language is from Section 607.1 of the International Fire Code. The requirements for elevators should be listed in the IEBC rather than by reference.

Analysis: The proposed standard, ASME A17.3 is currently referenced in the *International Fire Code*. Also, if this proposal is approved, the standard ASME A17.3-2002 Safety Code for Existing Elevators and Escalators will be added to Chapter 14.

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

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

EB45-04/05
704.2.1, 704.2.2 (New)

Proponent: Daniel E. Nichols, New York State Department of State, Albany, NY

1. Revise as follows:

704.2.1 Manual fire alarm systems. ~~In Group A, B, E, F, H, I, M, R-1, and R-2 occupancies~~ Where required by the *International Building Code* a manual fire alarm system shall be provided on all floors in the work area. Alarm notification appliances shall be provided on such floors and shall be automatically activated as required by the *International Building Code*.

Exceptions:

~~1. Where the International Building Code does not require a manual fire alarm system.~~

1. ~~2.~~ Alarm-initiating and notification appliances shall not be required to be installed in tenant spaces outside of the work area.
2. ~~3.~~ Visual alarm notification appliances are not required, except where an existing alarm

system is upgraded or replaced or where a new fire alarm system is installed.

2. Add new text as follows:

704.2.2 Automatic fire detection. Where required by the *International Building Code* for new buildings, automatic fire detection systems shall be provided on all floors in the work area.

Reason: The purpose of this code change proposal is to require entire buildings, or portions thereof that are undergoing rehabilitations in Alteration Level 3 to install a fire detection system when required by the IBC. The reason for this code change proposal is that the IEBC would never require a continuously operating occupancy that isn't affected by the existing building requirement of the IFC to install a fire detection system or manual fire alarm system. Reviewing the various levels of rehabilitation that require addition of fire alarm systems, work categorized under Alterations Level 3 currently does not add any performance features to the building in regard to fire alarm systems, just the application area.

As an example, this code change proposal would require smaller lodging facilities, special use buildings (such as special amusement buildings and high-pile combustible storage), and all I-1 occupancies (currently limited to assisted living) to be protected by a fire detection system. The existing fire alarm requirements are very specific in what types of occupancies, including listed uses in some groups, that require fire alarm systems. The existing requirements would allow a building that is significantly rehabilitated that does not have an adequate water supply, to continue use without a sprinkler system or a fire detection system, even if both are required for new construction. This would leave occupants of buildings without fire protection or even notification of a fire within buildings such as substance-abuse rehab facilities.

Analysis: If this proposal and EB-46 04/05 get approved, note that Section 704.2.2, as proposed in this proposal, will follow 704.1of EB-46.

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

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

EB46-04/05

604, 704

Proponent: Greg Rogers, Kitsap County Fire District #7, Port Orchard, WA, representing Kitsap Country Fire Prevention Officers

1. Revise as follows:

SECTION 604
FIRE PROTECTION

604.1 Scope. (No change to current text.)

604.2 Automatic sprinkler systems. Automatic sprinkler systems shall be provided in accordance with the ~~requirements of Sections 604.2.1 through 604.2.5. Installation requirements shall be in accordance with the~~ *International ~~Building~~ Fire Code*.

2. Delete without substitution:

~~**604.2.1 (Supp) High-rise buildings.** In high-rise buildings, work areas that include exits or corridors shared by more than one tenant or that serve an occupant load greater than 30 shall be provided with automatic sprinkler protection in the entire work area where the work area is located on a floor that has a sufficient sprinkler water supply system from an existing standpipe or a sprinkler riser serving that floor.~~

~~**604.2.1.1 Supplemental automatic sprinkler system requirements.** Where the work area on any floor exceeds 50 percent of that floor area, Section 604.2.1 shall apply to the entire floor on which the work area is located.~~

~~**Exception:** Tenant spaces that are entirely outside the work area.~~

~~**604.2.2 Groups A, E, F-1, H, I, M, R-1, R-2, R-4, S-1, and S-2**. In buildings with occupancies in Groups A, E, F-1, H, I, M, R-1, R-2, R-4, S-1, and S-2, work areas that include exits or corridors shared by more than one tenant or that serve an occupant load greater than 30 shall be provided with automatic sprinkler protection where all of the following conditions occur:~~

1. ~~The work area is required to be provided with automatic sprinkler protection in accordance with the *International Building Code* as applicable to new construction;~~
2. ~~The work area exceeds 50 percent of the floor area; and~~
3. ~~The building has sufficient municipal water supply for design of a fire sprinkler system available to the floor without installation of a new fire pump.~~

~~**Exception:** Work areas in Group R occupancies three stories or less in height.~~

~~**604.2.2.1 Mixed uses.** In work areas containing mixed uses, one or more of which requires automatic sprinkler protection in accordance with Section 604.2.2, such protection shall not be required throughout the work area provided that the uses requiring such protection are separated from those not requiring protection by fire-resistance-rated construction having a minimum 2-hour rating for Group H and a minimum 1-hour rating for all other occupancy groups.~~

~~**604.2.3 Windowless stories.** Work located in a windowless story, as determined in accordance with the International Building Code, shall be sprinklered where the work area is required to be sprinklered under the provisions of the *International Building Code* for newly constructed buildings and the building has a sufficient municipal water supply available to the floor without installation of a new fire pump.~~

~~**604.2.4 Other required suppression systems.** In buildings and areas listed in Table 903.2.13 of the International Building Code, work areas that include exits or corridors shared by more than one tenant or serving an occupant load greater than 30 shall be provided with sprinkler protection under the following conditions:~~

1. ~~The work area is required to be provided with automatic sprinkler protection in accordance with the *International Building Code* applicable to new construction; and~~
2. ~~The building has sufficient municipal water supply for design of a fire sprinkler system available to the floor without installation of a new fire pump.~~

~~**604.2.5 Supervision.** Fire sprinkler systems required by this section shall be supervised by one of the following methods:~~

1. ~~Approved central station system in accordance with NFPA 72;~~
2. ~~Approved proprietary system in accordance with NFPA 72;~~
3. ~~Approved remote station system of the jurisdiction in accordance with NFPA 72; or~~
4. ~~Approved local alarm service that will cause the sounding of an alarm in accordance with NFPA 72.~~

~~**Exception:** Supervision is not required for the following:~~

1. ~~Underground gate valve with roadway boxes.~~
2. ~~Halogenated extinguishing systems.~~
3. ~~Carbon dioxide extinguishing systems.~~
4. ~~Dry and wet chemical extinguishing systems.~~
5. ~~Automatic sprinkler systems installed in accordance with NFPA 13R where a common supply main is used to supply both domestic and automatic sprinkler systems and a separate shutoff valve for the automatic sprinkler system is not provided.~~

3. Revise as follows:

604.3 Standpipes. Where the work area includes exits or corridors shared by more than one tenant and is located more than 50 feet (15 240 mm) above or below the lowest level of fire department access, a standpipe system shall be provided. Standpipes shall have an approved fire department connection with hose connections at each floor level above or below the lowest level of fire department access. Standpipe systems shall be installed in accordance with the *International ~~Building~~ Fire Code*.

~~**Exceptions:**~~

1. ~~No pump shall be required provided that the standpipes are capable of accepting delivery by fire department apparatus of a minimum of 250 gallons per minute (gpm) at 65 pounds per square inch (psi) (946 L/m at 448KPa) to the topmost floor in buildings equipped throughout with an automatic sprinkler system or a minimum of 500 gpm at 65 psi (1892 L/m at 448KPa) to the topmost floor in all other buildings. Where the standpipe terminates below the topmost floor, the standpipe shall be designed to meet (gpm/psi) (L/m/KPa) requirements of this exception for possible future extension of the standpipe.~~
2. ~~The interconnection of multiple standpipe risers shall not be required.~~

604.4 Fire alarm and detection. (No change to current text)

604.4.1 Occupancy requirements. A fire alarm system shall be installed in accordance with ~~Sections 604.4.1.1 through 604.4.1.7~~ the *International Fire Code*. Existing alarm-notification appliances shall be automatically activated throughout the building. Where the building is not equipped with a fire alarm system, alarm-notification appliances within the work area shall be provided and automatically activated.

Exceptions:

1. Occupancies with an existing, previously approved fire alarm system.
2. Where selective notification is permitted, alarm-notification appliances shall be automatically activated in the areas selected.

4. Delete without substitution:

~~**604.4.1.1 Group E.** A fire alarm system shall be installed in work areas of Group E occupancies as required by the International Fire Code for existing Group E occupancies.~~

~~**604.4.1.2 Group I-1.** A fire alarm system shall be installed in work areas of Group I-1 residential care/assisted living facilities as required by the International Fire Code for existing Group I-1 occupancies.~~

~~**604.4.1.3 Group I-2.** A fire alarm system shall be installed in work areas of Group I-2 occupancies as required by the *International Fire Code* for existing Group I-2 occupancies.~~

~~**604.4.1.4 Group I-3.** A fire alarm system shall be installed in work areas of Group I-3 occupancies as required by the International Fire Code for existing Group I-3 occupancies.~~

~~**604.4.1.5 Group R-1**. A fire alarm system shall be installed in Group R-1 occupancies as required by the *International Fire Code* for existing Group R-1 occupancies.~~

~~**604.4.1.6 Group R-2**. A fire alarm system shall be installed in work areas of Group R-2 apartment buildings as required by the International Fire Code for existing Group R-2~~

~~occupancies.~~

~~**604.4.1.7 Group R-4.** A fire alarm system shall be installed in work areas of Group R-4 residential care/assisted living facilities as required by the *International Fire Code* for existing Group R-4 occupancies.~~

~~**604.4.2 Supplemental fire alarm system requirements.** Where the work area on any floor exceeds 50 percent of that floor area, Section 604.4.1 shall apply throughout the floor.~~

~~**Exception:** Alarm-initiating and notification appliances shall not be required to be installed in tenant spaces outside of the work area.~~

~~**604.4.3 Smoke alarms.** Individual sleeping units and individual dwelling units in any work area in Group R-1, R-2, R-3, R-4, and I-1 occupancies shall be provided with smoke alarms in accordance with the *International Fire Code*.~~

~~**Exception:** Interconnection of smoke alarms outside of the rehabilitation work area shall not be required.~~

5. Revise as follows:

SECTION 704
FIRE PROTECTION

704.1 ~~Automatic sprinkler systems.~~ General. ~~Automatic sprinkler systems in accordance with Section 604.2 shall be provided in all work areas.~~ Fire protection systems in accordance with Section 604 shall be provided in all work areas.

6. Delete without substitution:

~~**704.1.1 High-rise buildings.** In high-rise buildings, work areas shall be provided with automatic sprinkler protection 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.~~

~~**704.1.2 Rubbish and linen chutes.** Rubbish and linen chutes located in the work area shall be provided with sprinklered protection where protection of the rubbish and linen chute would be required under the provisions of the *International Building Code* for new construction and the building has sufficient municipal water supply available to the site.~~

~~**704.2 Fire alarm and detection systems.** Fire alarm and detection systems complying with Sections 604.4.1 and 604.4.3 shall be provided throughout the building in accordance with the *International Building Code*.~~

~~**704.2.1 Manual fire alarm systems.** In Group A, B, E, F, H, I, M, R-1, and R-2 occupancies a manual fire alarm system shall be provided on all floors in the work area. Alarm notification appliances shall be provided on such floors and shall be automatically activated as required by the *International Building Code*.~~

~~**Exceptions:**~~

1. ~~Where the International Building Code does not require a manual fire alarm system.~~
2. ~~Alarm-initiating and notification appliances shall not be required to be installed in tenant spaces outside of the work area.~~
3. ~~Visual alarm notification appliances are not required, except where an existing alarm system is upgraded or replaced or where a new fire alarm system is installed.~~

Reason: The *International Fire Code* should be referenced to determine the level and degree of fire protection required for alterations or occupancy changes. Currently, the IEBC allows a building to change from Business occupancy to an Assembly occupancy without requiring additional fire protection. The IEBC also requires no additional fire protection to change from a B occupancy to an H occupancy. This would be an unreasonable level of safety, therefore these sections should refer to the IFC. It would be appropriate to add these sections to the IFC and allow these items to be heard by the fire officials.

Analysis: If this proposal and EB-45 04/05 get approved, note that Section 704.2.2, as proposed in EB-45, will follow 704.1of this proposal.

Cost Impact: None

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

EB47-04/05
706.1

Proponent: James N. Bartl, AIA,, James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh Inspections, NC

Delete and substitute as follows:

SECTION 706
ACCESSIBILITY

~~**706.1 General.** A building, facility, or element that is altered shall comply with Section 506.~~

706.1 General. A building space, or element that is altered shall comply with the *International Building Code* Chapter 34 and Chapter 11. Where full compliance is technically infeasible, the alteration shall provide access to the

maximum extent feasible.

Reason: The proposed change recognizes that at Alteration Level-3 the building, space, or tenancy is in a reconstruction scope. Compliance with the accessibility requirements of the *International Building Code* should be achievable at this time. If an accessibility requirement could not be met because of structural or load bearing obstacles, then this code change would recognize technical infeasibility for full compliance and therefore allow compliance to a maximum degree.

Analysis: A question would be what the intent is of the reference to Chapter 34. The accessibility requirements in Section 3409 are almost identical to those in Section 506 of the IEBC.

Cost Impact: None

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

EB48-04/05
706.2

Proponent: James N. Bartl, AIA,, James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh Inspections, NC

Add new text as follows:

706.2 Technical infeasibility. Where it is technically infeasible to comply with the *International Building Code*, Chapter 11, the alteration shall provide access to the maximum extent technically feasible.

Reason: At Alteration Level-3, where reconstruction will take place, if there is little likelihood the accessibility requirements can be met because existing structural conditions would require removing or altering a load-bearing member which is an essential part of the structural frame; or because other existing physical or site constraints prohibit modification of the space for accessibility, then the work would be allowed to comply to the greatest structural extent possible. The proposed change would align the IEBC with ADA for technical infeasibility.

Analysis: Section 506.1, which is applicable based on the reference in Section 706.1, contains language similar to what is proposed.

Cost Impact: None

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

EB49-04/05
707.7

Proponent: Gary R. Searer, S.E., Wiss, Janney, Elstner Associates, Inc., Emeryville, CA, representing himself

Revise as follows:

707.7 Voluntary lateral-force-resisting system alterations. Alterations of existing structural elements and additions of new structural elements that are initiated for the purpose of increasing the lateral-force-resisting strength or stiffness of an existing structure and that are not required by other sections of this code shall not be required to be designed for forces conforming to the *International Building Code* provided that an engineering analysis is submitted to show that:

1. The capacity of existing structural elements required to resist forces is not reduced;
2. The lateral loading to existing structural elements is not increased by more than 10% ~~beyond their capacity~~;
3. New structural elements are detailed and connected to the existing structural elements as required by the *International Building Code*;
4. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required by the *International Building Code*; and
5. A dangerous condition as defined in this code is not created.

Voluntary alterations to lateral-force-resisting systems conducted in accordance with Appendix A and the referenced standards of this code shall be permitted.

Reason: This proposal is intended as a minor editorial change that clarifies the intent of the provisions.

The first change simply clarifies that the addition of structural elements to improve the lateral force resisting system (such as the addition of plywood to a wood-framed wall) is included with this section.

The second change provides a reasonable cut-off for the effects of a seismic upgrade. The way the section was worded, one could imagine two similar structures, to both of which a concrete shear wall is added. One structure has many structural elements that are already overstressed and the other has a number of elements with demand to capacity ratios at 1.0. Since the addition of a concrete shear wall adds seismic mass (however slight), the structure with several elements with demands to capacities of 1.0 is likely to experience a slight overstress as a result of the addition of the wall, creating a disincentive to perform the work because requirement #2 now requires these elements to be upgraded as well. Meanwhile, the first structure with structural elements already overstressed does not trigger further upgrades, since the elements were already overstressed prior to the addition of the wall, so the addition of a wall did not increase the demand beyond their capacity. Thus, the arguably better structure is required to have more upgrades than the arguably worse structure.

Since the design of structures for seismic loads depends on large response reduction factors contingent upon significant amounts of structural damage occurring, a 10% threshold in increase in forces as a result of a voluntary upgrade is reasonable, given how imprecise knowledge regarding earthquake demands and building performance

tends to be (i.e. a 10% increase in demand is simply insignificant compared to response reduction factors on the order of 2 to 8).

Cost Impact: None

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

EB50-04/05
801

Proponent: Greg Wheeler, C.B.O., Chair, ICC Ad Hoc Committee on Existing Buildings

Revise as follows:

SECTION 801
GENERAL

801.1 Scope. The provisions of this chapter shall apply where a change of occupancy occurs, as defined in Section 202, including:

1. Where the occupancy classification is not changed , or
2. Where there is a change in occupancy classification and the occupancy group designation changes.

801.2 Change in occupancy with no change of occupancy classification. A change in occupancy, as defined in Section 202, with no change of occupancy classification shall not be made to any structure which will subject the structure to any special provisions of the applicable international codes, including the provisions of Sections 802 through 811, without the approval of the code official. A certificate of occupancy shall be issued where it has been determined that the requirements for the change in occupancy have been met.

~~801.1~~ **801.2.1 Repair and alteration with no change of occupancy classification.** Any repair or alteration work undertaken in connection with a change of occupancy that does not involve a change of occupancy classification ~~as described in the *International Building Code*~~ shall conform to the applicable requirements for the work as classified in Chapter 3 and to the requirements of Sections 802 through 811.

Exceptions:

1. Compliance with all of the provisions of Chapter 7 is not required where the change of occupancy classification complies with the requirements of Section 812.3.
2. As modified in Section 1005 for historic buildings.
3. ~~As permitted in Chapter 12.~~

801.3 Change of occupancy classification. Where the occupancy classification of a building changes, the provisions of Sections 802 through 812 shall apply. This includes a change of occupancy classification within a group as well as a change of occupancy classification from one group to a different group.

~~801.2~~ **801.3.1 Partial change of occupancy ~~group~~ classification.** Where a portion of an existing building is changed to a new occupancy ~~group~~ classification, Section 812 shall apply.

~~801.3~~ **801.4 Certificate of occupancy required.** A certificate of occupancy shall be issued where a change of occupancy occurs that results in a different occupancy classification as determined by the *International Building Code*.

Reason: The ICC Board established the Ad Hoc Committee on Existing Buildings to evaluate and further refine the IEBC in response to issues raised by the membership over the past couple of code development cycles. The key issues being: the need for more options to address the use and re-use of existing buildings, including the use of the current provisions in the IBC; how to better coordinate the IEBC with the other I-Codes; a review and clarification of specific provisions in the current IEBC; and the mechanism by which code development maintenance and the necessary coordination of provisions can best be achieved.

This proposal focuses on providing clarification of the application of the provisions of Chapter 8 as well as including new provisions which are needed to address changes of occupancy which do not have a corresponding change of occupancy classification.

A change of occupancy can take two forms. The most obvious is one where the classification (ie "group) changes. This change can be a change within a group (ie Group A-1 to A-2) or a change from one group to another (ie Group B to Group M). The current provisions in Section 812 are intended to address such changes.

However, Chapter 8 lacks provisions to address situations where there is a change in the purpose or level of activity which results in a greater hazard even though the occupancy classification has not changed. This is addressed under the broad definition of "change of occupancy", currently defined in Chapter 2. A simple example illustrates this situation. Assume the occupancy classification is a group A-2 nightclub, unsprinklered in accordance with the 2003 IBC/IFC, with a posted occupant load of 275. The owner proposes to increase the occupant load to 325, which may or may not include an associated alteration or re-configuring of the space. Under the new construction provisions in the 2003 IBC and IFC, this space would now be required to be sprinklered. This circumstance is not addressed in Section 812. However, with the proposed performance language in Section 801.2, the "special provisions" of the IBC would be triggered and the change of occupancy would result in a sprinkler requirement.

Regardless of the type of change of occupancy, a certificate of occupancy is necessary. This added language is found in Sections 801.2 and 801.4. The proposed text in 801.2 is taken from Section 3406.2 of the IBC.

Cost Impact: None

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

EB51-04/05
807.3.1

Proponent: Michael Valley, Magnusson Klemencic Associates, Seattle, WA, representing NCSEA/Structural Engineers Association of Washington

Revise as follows:

807.3.1 Compliance with the *International Building Code*. When a building or portion thereof is subject to a change of occupancy such that a change in the nature of the occupancy results in a higher seismic factor based on Table 1604.5 of the *International Building Code* or where such change of occupancy results in a reclassification of a building to a higher hazard category as shown in Table 812.4.1 and a change of a Group M occupancy to a Group A, E, I-1 R-1, R-2, or R-4 occupancy with two-thirds or more of the floors involved in Level 3 alteration work, the building shall conform to the seismic requirements of the *International Building Code* for the new seismic use group.

Exceptions:

1. through 4. (No change to current text)
5. Unreinforced masonry bearing wall buildings in Occupancy Category III ~~Seismic Use Group II and in Seismic Use Groups II and III~~ when ~~in~~ assigned to Seismic Design Categor~~y~~~~ies~~ A~~,~~ or B, ~~and C~~ shall be allowed to be strengthened to meet the requirements of Appendix Chapter A1 of ~~the~~ this code (GSREB).

Reason: This change is necessary to remove an inconsistency in the IEBC. According to Appendix section A102.2, the unreinforced masonry provisions do not apply to SUG II or III in SDC C thru F. Since Chapter A1 is a hazard reduction document, it is not appropriate for any building in SUG III, regardless of seismic hazard. This proposal also replaces Seismic Use Group with equivalent Occupancy Category for consistency with IBC Table 1604.5. (ASCE 7-05 uses Occupancy Category rather than SUG.)

Cost Impact: None

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

EB52-04/05
807.3.1

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

807.3.1 Compliance with the *International Building Code*. When a building or portion thereof is subject to a change of occupancy such that a change in the nature of the occupancy results in a higher seismic factor based on Table 1604.5 of the *International Building Code* or where such change of occupancy results in a reclassification of a building to a higher hazard category as shown in Table 812.4.1 ~~and~~ or where a change of a Group M occupancy to a Group A, E, I-1, R-1, R-2, or R-4 occupancy with two-thirds or more of the floors involved in Level 3 alteration work, the building shall conform to the seismic requirements of the *International Building Code* for the new seismic use group.

Exceptions:

1. Group M occupancies being changed to Group A, E, I-1, R-1, R-2, or R-4 occupancies for buildings less than six stories in height and in Seismic Design Category A, B, or C.
2. Specific detailing provisions required for a new structure are not required to be met where it can be shown that an acceptable level of performance and seismic safety is obtained for the applicable seismic use group using reduced *International Building Code* level seismic forces as specified in Section 407.1.1.3. The rehabilitation procedures shall be approved by the code official and shall consider the regularity, over-strength, redundancy, and ductility of the lateral-load-resisting system within the context of the existing detailing of the system.
3. Where the area of the new occupancy with a higher hazard category is less than or equal to 10 percent of the total building floor area and the new occupancy is not classified as Seismic Use Group IV. For the purposes of this exception, where a structure is occupied for two or more occupancies not included in the same seismic use group, the structure shall be assigned the classification of the highest seismic use group corresponding to the various occupancies. Where structures have two or more portions that are structurally separated in accordance with Section 1620 of the *International Building Code*, each portion shall be separately classified. Where a structurally separated portion of a structure provides required access to, required egress from, or shares life safety components with another portion having a higher seismic use group, both portions shall be assigned the higher seismic use group. The cumulative effect of the

area of occupancy changes shall be considered for the purposes of this exception.

~~4. Where the new occupancy with a higher hazard category is within only one story of a building or structure, only the lateral-force-resisting elements in that story and all lateral-force-resisting elements below that story shall be required to comply with Section 807.3.1 and Exception 2. The lateral forces generated by masses of such upper floors shall be included in the analysis and design of the lateral-force-resisting systems for the strengthened floor. Such forces may be applied to the floor level immediately above the topmost strengthened floor and be distributed in that floor in a manner consistent with the construction and layout of the exempted floor.~~

~~5.~~ 4. Unreinforced masonry bearing wall buildings in Seismic Use Group II and in Seismic Use Groups II and III when in Seismic Design Categories A, B, and C shall be allowed to be strengthened to meet the requirements of Appendix A of ~~the~~ this code (GSREB).

Reason:

- 807.3.1: The proposal corrects an apparent error. As written, the "and" condition could never occur because a change from M to A, E, I-1 R-1, R-2, or R-4 would not result in a higher hazard category per Table 812.4.1.
- Exception 4 is proposed for deletion because strengthening or stiffening a structure up to an arbitrary elevation and not above that elevation creates potentially dangerous irregularities or dynamic anomalies. In the 1995 Kobe earthquake, for example, mid-height story collapses occurred where the lateral system strength or stiffness changed suddenly from one story to the next. Also, the final sentence of Exception 4 is both unclear and unnecessary; it is commentary language about how to perform analysis and is not needed as a code provision.
- Exception 5: Editorial.

Cost Impact: None

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

EB53-04/05
812.4.2.1

Proponent: William Stevens, Anderson County, SC,

Delete without substitution:

812.4.2.1 Height and area for change to higher hazard category. When a change of occupancy group is made to a higher hazard category as shown in Table 812.4.2, heights and areas of buildings and structures shall comply with the requirements of Chapter 5 of the International Building Code for the new occupancy group.

~~**Exception:** A one-story building changed to Group E shall not be required to meet the area limitations of the International Building Code.~~

Reason: Because a Group E has occupants that are understood to require greater protection because of their inability to identify dangers and because Group E occupancies are often used as emergency shelters that provide sleeping facilities during times of disaster, the area requirements of these buildings should comply with the requirements of the IBC. To do less than require these minimum standards, unless we no longer deem the IBC to be a minimum standard, would unnecessarily endanger the public generally and children specifically.

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

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

EB54-04/05
812

Proponent: Greg Wheeler, C.B.O., Chair, Ad Hoc Committee on Existing Buildings

1. Revise entire Section 812 as follows:

SECTION 812
CHANGE OF OCCUPANCY CLASSIFICATION

812.1 General. The provisions of this section shall apply to buildings or portions thereof undergoing a change of occupancy classification. This includes a change of occupancy classification within a group as well as a change of occupancy classification from one group to a different group. Such buildings shall also comply with Sections 802 through 811. The application of requirements for the change of occupancy shall be as set forth in Section 812.1.1 through 812.1.4. A change of occupancy, as defined in Section 202, without a corresponding change of occupancy classification , shall comply with Section 801.2.

~~**812.1**~~ **812.1.1 Compliance with Chapter 7.** ~~The occupancy classification of an existing building may be changed, provided that the building meets all of~~ The requirements of Chapter 7 shall be applicable ~~applied~~ throughout the building for the new occupancy ~~group~~ classification based on the separation conditions set forth in Sections 812.1.1.1 and 812.1.1.2 ~~and complies with the requirements of Sections 802 through 812~~.

~~**812.1.1**~~ **812.1.1.1 Change of occupancy ~~group~~ classification without separation.** Where a portion of an existing building is changed to a new occupancy ~~group~~ classification and that portion is not separated from the remainder of the building with fire barriers having a fire-resistance rating as required in the *International Building*

Code for the separate occupancy, the entire building shall comply with all of the requirements of Chapter 7 applied throughout the building for the most restrictive occupancy ~~group~~ classification in the building and with the requirements of this chapter.

~~Exception:~~ ~~Compliance with all of the provisions of Chapter 7 is not required when the change of occupancy group classification complies with the requirements of Section 812.3.~~

~~812.1.2~~ 812.1.1.2 Change of occupancy ~~group~~ classification with separation. Where a portion of an existing building that is changed to a new occupancy ~~group~~ classification and that portion is separated from the remainder of the building with fire barriers having a fire-resistance rating as required in the *International Building Code* for the separate occupancy, that portion shall comply with all the requirements of Chapter 7 for the new occupancy ~~group~~ classification and with the requirements of this chapter.

~~Exception:~~ ~~Compliance with all of the provisions of Chapter 7 is not required when the change of use complies with the requirements of Section 812.3.~~

812.1.2 Fire protection and interior finish. The provisions of Sections 812.2 and 812.3 for fire protection and interior finish, respectively, shall apply to all buildings undergoing a change of occupancy classification.

~~812.2 Hazard category classifications.~~ 812.1.3 Change of occupancy classification based on hazard category. The relative degree of hazard between different occupancy ~~group~~ classifications shall be ~~as set forth in~~ determined in accordance with the category ~~classifications~~ specified in Tables 812.4, 812.5 and 812.6 ~~812.4.1, 812.4.2, and 812.4..3. Sections 812.4.1, 812.4.2, and 812.4.3~~. Such a determination shall be the basis for the application of Sections 812. 4 through 812.7.

812.1.4 Accessibility. All buildings undergoing a change of occupancy classification shall comply with Section 812.8.

~~812.2.1 Change of occupancy classification to an equal or lesser hazard.~~ ~~An existing building or portion thereof may have its use changed to an occupancy group within the same hazard category or to an occupancy group within a lesser hazard category (higher number) in all four hazard category , provided it complies with the provisions of Chapter 7 for the new occupancy group , applied throughout the building or portion thereof.~~

~~Exception:~~ ~~Compliance with all the provisions of Chapter 7 is not required where the change of occupancy group complies with the requirements of Section 812.3.~~

~~812.2.2 Change of occupancy classification to a higher hazard.~~ ~~An existing building shall comply with all of the applicable requirements of this chapter when a change in occupancy group places it in a higher hazard category or when the occupancy group is changed within Group H.~~

~~812.2.3 Change of occupancy classification to a higher hazard in all three hazard classifications.~~ ~~An existing building may have its use changed to a higher hazard rating (lower number) in all three hazard category classifications designated in Tables 812.4.1, 812.4.2, and 812.4.3, provided it complies with this chapter or with Chapter 12.~~

~~812.3 Change of occupancy classification to an equal or lesser hazard in all three hazard classifications.~~ ~~A change of use to an occupancy group within the same hazard classification category or to an occupancy group within a lesser hazard classification category (higher number) in the three hazard category classifications addressed by Tables 812.4.1, 812.4.2, and 812.4.3 shall be permitted in an existing building or portion thereof, provided the provisions of Sections 812.3.1 through 812.3.5 are met.~~

~~812.3.1 Minimum requirements.~~ ~~Regardless of the occupancy group involved, the following requirements shall be met:~~

1. ~~The capacity of the means of egress shall comply with *International Building Code*.~~
2. ~~The interior finish of walls and ceilings shall comply with the requirements of the *International Building Code* for the new occupancy group.~~

~~812.3.2 Groups I-1, R-1, R-2 or R-4.~~ ~~Where the new use is classified as a Group I-1, R-1, R-2 or R-4 occupancy the following requirements shall be met.~~

1. ~~Corridor doors and transoms shall comply with the requirements of Sections 605.5.1 and 605.5.2.~~
2. ~~Automatic sprinkler systems shall comply with the requirements of Section 604.2.~~
3. ~~Fire alarm and detection systems shall comply with the requirements of Section 604.4.~~

~~812.3.3 Group I-2.~~ ~~Where the new use is classified as a Group I-2 occupancy, the following requirements shall be met:~~

1. ~~Egress doorways from patient sleeping rooms and from suites of rooms shall comply with the requirements of Section 605.4.1.2.~~
2. ~~Shaft enclosures shall comply with the requirements of Section 703.1.~~
3. ~~Smoke barriers shall comply with the requirements~~

~~of Section 603.3.~~

4. Automatic sprinkler systems shall comply with the requirements of Section 604.2.
5. ~~Fire alarm and detection systems shall comply with the requirements of Section 604.4.~~

~~**812.3.4 Group I-3.** Where the new use is classified as a Group I-3 occupancy, the following requirements shall be met:~~

1. ~~Locking of egress doors shall comply with the requirements of Section 605.4.5.~~
2. ~~Shaft enclosures shall comply with the requirements of Section 703.1.~~
3. ~~Automatic sprinkler systems shall comply with the requirements of Section 604.2.~~
4. ~~Fire alarm and detection systems shall comply with the requirements of Section 604.4.~~

~~**812.3.5 Group R-3.** Where the new use is classified as a Group R-3 occupancy, the following requirements shall be met:~~

1. ~~Dwelling unit separation shall comply with the requirements of Section 703.2.1.~~
2. ~~The smoke alarm requirements of Section 604.4.3 shall be met.~~

812.2 Fire protection systems. Fire protection systems shall be provided in accordance with Sections 812.2.1 and 812.2.2

812.2.1 Fire sprinkler system. Where a change in occupancy classification occurs that requires an automatic fire sprinkler system to be provided based on the new occupancy in accordance with Chapter 9 of the *International Building Code*, such system shall be provided throughout the area where the change of occupancy occurs.

812.2.2 Fire alarm and detection system. Where a change in occupancy classification occurs that requires a fire alarm and detection system to be provided based on the new occupancy in accordance with Chapter 9 of the *International Building Code*, such system shall be provided throughout the area where the change of occupancy occurs. Existing alarm-notification appliances shall be automatically activated throughout the building. Where the building is not equipped with a fire alarm system, alarm notification appliances shall be provided throughout the area where the change of occupancy occurs and shall be automatically activated.

812.3 Interior finish. In areas of the building undergoing the change of occupancy classification, the interior finish of walls and ceilings shall comply with the requirements of the *International Building Code* for the new occupancy classification.

~~**812.4 Fire and life safety.** The fire and life safety provisions of this section shall be applicable to buildings or portions of buildings undergoing a change of occupancy classification.~~

~~**812.4.1**~~ **812.4 Means of egress~~, general~~.** No change. (Renumber all subsections)

TABLE ~~812.4.1~~ 812.4
MEANS OF EGRESS HAZARD CATEGORIES ~~AND CLASSIFICATIONS: LIFE SAFETY AND EXITS~~

~~**812.4.1.3**~~ **812.4.3 Egress capacity.** Egress capacity shall meet or exceed the occupant load as specified in the International Building Code for the new occupancy. ~~if the change of occupancy classification is to an equal or lesser hazard category when evaluated in accordance with Table 812.4.1.~~

~~**812.4.2**~~ **812.5 Heights and areas.** No change. (Renumber all subsections)

TABLE ~~812.4.2~~ 812.5
HEIGHTS AND AREAS HAZARD CATEGORIES ~~AND CLASSIFICATIONS:HEIGHTS AND AREAS~~

~~**812.4.3**~~ **812.6 Exterior wall fire-resistance ratings.** No change. (Renumber all subsections)

TABLE ~~812.4.3~~ 812.6
EXPOSURE OF EXTERIOR WALLS HAZARD CATEGORIES ~~AND CLASSIFICATIONS:EXPOSURE OF EXTERIOR WALLS~~

~~**812.4.4**~~ **812.7 Enclosure of vertical shafts.** No change. (Renumber all subsections)

~~**812.5**~~ **812.8 Accessibility.** No change. (Renumber all subsections)

~~**812.6 Seismic loads.** Existing buildings with a change of occupancy classification shall comply with the seismic provisions of Section 807.3.~~

2. Revise "occupancy group" to "occupancy classification" throughout Section 812.

Reason: The ICC Board established the Ad Hoc Committee on Existing Buildings to evaluate and further refine the IEBC in response to issues raised by the membership over the past couple of code development cycles. The key issues being: the need for more options to address the use and re-use of existing buildings, including the use of the current provisions in the IBC; how to better coordinate the IEBC with the other I-Codes; a review and clarification of specific provisions in the current IEBC; and the mechanism by which code development maintenance and

the necessary coordination of provisions can best be achieved.

This proposal focuses on clarifying the application of the IEBC to both change of occupancy situations where there is no corresponding change in classification as well as where there is a change in classification.

New 812.1: A proposed new section that sets forth the requirements for change of occupancy. This section identifies 3 types of change of occupancy. The first 2 involve a change in classification (ie "Group"). The third is a reference to a change in occupancy without a corresponding change in group and is addressed in a separate proposal to Section 801. Proposed Section 812.1, including proposed revisions to the subsections which follow, is intended to provide clear direction as to the application of the requirements for changes of occupancy.

New 812.1.1: Re-wording of current Section 812.1, setting forth the application of Chapter 7 to changes of occupancy. This also includes a change from "group" to "classification" which is done throughout the proposal to achieve consistency.

New 812.1.1.1 & 812.1.1.2: The key to these changes is the deletion of the exception and the corresponding deletion of Section 812.3. See discussion at current 812.3.

New 812.1.2: This introductory language is coordinated with the deletion of the exceptions in current Sections 812.1.1, 812.1.2 and 812.2.1 and the proposed deletion of Section 812.3. See discussion at current 812.3.

New 812.1.3: Reformatting of the section as part of the direction provided in revised Section 812.1.

New 812.1.4: This section clarifies that the accessibility requirements in Section 812 are applicable regardless of the type of change of occupancy.

Current 812.2.1: Proposed for deletion as this section is redundant with revised Section 812.1.1 which requires compliance with Chapter 7.

Current 812.2.2 & 812.2.3: Proposed for deletion as this is redundant with revised Section 812.1.3 which sets forth the application of requirements based on the relative hazard categories.

Current 812.3: As currently written, this section provides a roadmap of code references to sections in Chapters 6 and 7, based on specific occupancies. This was originally coordinated with the exceptions cited in Sections 812.1, 812.1.2 and 812.2.1 which did not require full compliance with Chapter 7.

Upon further review of the exceptions to Chapter 7 requirements, it became clear that while well-intentioned in addressing occupancies that typically involve overnight accommodations and/or conditions of restraint/supervision, there are other changes of occupancies which also represent a potential increase of hazard even though the change in "relative hazard" in the hazard categories tables would not indicate such. For example, a change from an R-1 to an A-2, identified in the same relative hazard category for all three types of hazards (life safety and exits; height and areas; exposure of exterior walls) actually brings forth a different type of hazard – overnight accommodations versus an assembly area with higher densities of occupants and the hazards associated with an A-2 environment. As such, this section is proposed for deletion in favor of new sections 812.2 and 812.3 which require fire protection requirements for all occupancies (not just the ones listed in current Section 812.3) and the need for interior finishes to comply with the IBC (current Item 2 to Section 812.3.1), as two critical life safety features.

New 812.2: This new section expands the application of the sprinkler and alarm requirements beyond those of the occupancies currently listed in Section 812.3. As sprinkler and alarm requirements are not necessarily coordinated with the relative hazard categories, this text will require application of the new construction requirements for sprinklers and alarms based on Chapter 9 of the IBC for even those occupancies where the change of occupancy is within the same relative hazard.

New 812.3: This new section is taken from current Item 2 of Section 812.3.1 since the application of interior finishes based on occupancy is a key life safety feature, regardless of the type of change of occupancy.

Renumbered 812.4; 812.5; 8122.6 and 812.7: The renumbering sets forth the requirements in a more prominent code order as a code section instead of having these key considerations as sub-sections. Editorial only.

New 812.4.3: This section is revised based on the "minimum requirements" found in Item 1 to Section 812.3.1 which is proposed for deletion. Any change of occupancy should be evaluated and verified that the occupant load can be accommodated with adequate egress capacity.

Current 812.6: Proposed for deletion as this is covered in new Section 812.1 which mandates compliance with Section 802 – 811, of which 807.3 addresses seismic issues.

Cost Impact: None

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

EB55-04/05
812.6

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Delete without substitution:

~~**812.6 Seismic loads.** Existing buildings with a change of occupancy classification shall comply with the seismic provisions of Section 807.3.~~

Reason: The section is redundant to Section 807.3.

Cost Impact: None

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

EB56-04/05
901.1, 901.1.1

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

1. Revise as follows:

901.1 (Supp) Scope. An addition to a building or structure shall comply with the building, plumbing, electrical and

mechanical codes without requiring the existing building or structure to comply with any requirements of those codes or of these provisions, except as required by this chapter.

2. Delete without substitution:

~~**901.1.1 (Supp) Flood hazard areas.** In flood hazard areas, the existing building is subject to the requirements of Section 903.5.~~

Reason: The proposal is editorial. In addition to Section 901.1.1 for flood hazard areas in Section 903.5, the existing building is subject to potential code compliance requirements for gravity loads in Section 903.2, lateral loads in Section 903.3, snow loads in Section 903.4 and smoke alarms in Section 904.2. Instead of adding these sections as subsections of Section 901.1, the proposal covers them all by a general reference.

Cost Impact: None

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

EB57-04/05
903.3

Proponent: Jim Rossberg, Structural Engineering Institute of ASCE, Reston, VA, representing NCSEA Code Advisory Committee, FEMA/BSSC CRSC and ASCE/SEI

Revise as follows:

903.3 Lateral-force-resisting system. The lateral-force-resisting system of existing buildings to which additions are made shall comply with Sections 903.3.1, 903.3.2, and 903.3.3.

Exceptions:

1. In Type V construction, Group R occupancies where the lateral-force story shear in any story is not increased by more than 10 percent.
2. Buildings of Group R occupancy with no more than five dwelling units or sleeping units used solely for residential purposes where the existing building and the addition comply with the conventional light-frame construction methods of the *International Building Code* or the provisions of the *International Residential Code*.
3. Additions where the lateral-force story shear in any story is not increased by more than ~~5~~ 10 percent.

Reason: It is proposed that the limit at which upgrading the entire lateral-force resisting system to comply with the seismic provisions for new structures be increased from 5% to 10%. It is felt that setting the limitation level at 5% is overly restrictive and results in a substantial increase in expense for only minimal improvement in the seismic performance of the completed structure. This change is consistent with Appendix 11B of the 2005 edition of ASCE 7-05.

Cost Impact: None

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

EB58-04/05
903.3, 903.3.2, 903.3.3

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

903.3 Lateral-force-resisting system. The lateral-force-resisting system of existing buildings to which additions are made shall comply with Sections 903.3.1, 903.3.2, and 903.3.3.

Exceptions:

~~1. In Type V construction, Group R occupancies where the lateral-force story shear in any story is not increased by more than 10 percent.~~
~~2.~~ 1. Buildings of Group R occupancy with no more than five dwelling units or sleeping units used solely for residential purposes where the existing building and the addition comply with the conventional light-frame construction methods of the *International Building Code* or the provisions of the *International Residential Code*.
~~3.~~ 2. ~~Additions~~ In other existing buildings where the lateral-force story shear in any story is not increased by more than ~~5~~ 10 percent cumulative.

903.3.2 Horizontal addition. Where horizontal additions are structurally connected to an existing structure, all lateral-force-resisting elements of the existing structure affected by such addition shall comply with the lateral load provisions of the *International Building Code*. ~~Lateral loads imposed on the elements of the existing structure and the addition shall be determined by a relative stiffness analysis of the combined structure including torsional effects.~~

903.3.3 Voluntary addition of structural elements to improve the lateral-force-resisting system. Voluntary addition of structural elements to improve the lateral-force-resisting system of an existing building shall comply with Section 707.7.

Reason: The threshold in Exception 3 is modified from 5% to 10% to correspond to ASCE-07 and the IBC. Exception 1 is deleted since it is no longer necessary.

In 903.3.2, the deletion is proposed because it is unnecessary in most cases and inconsistent with the Building Code in other cases. For rigid diaphragm structures, the provision is not needed because the analysis it requires is already required by the Building Code, which is cited in the previous sentence. For flexible diaphragm structures, relative stiffness analysis with torsional effects is generally not required for even new buildings with flexible diaphragms, so the provision as written should not apply.

Cost Impact: None

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

EB59-04/05

901, 905, 906

Proponent: Greg Wheeler, C.B.O., Chair, ICC Ad Hoc Committee on Existing Buildings

1. Revise as follows:

901.1 Scope. An addition to a building or structure shall comply with the ~~building, plumbing, electrical, and mechanical~~ International Codes for new construction, without requiring the existing building or structure to comply with any requirements of those codes or of these provisions. Where an addition impacts the existing building or structure, that portion shall comply with this code.

Exception: In flood hazard areas, the existing building is subject to the requirements of Section 903.5.

~~**904.1 Smoke alarms in an addition.** Whenever an addition is made to a building or structure of a Group R-3 or R-4 occupancy, hardwired, interconnected smoke alarms meeting the requirements of the *International Building Code* or *International Residential Code* as applicable shall be installed and maintained in the addition.~~

~~**904.2**~~ **904.1 Smoke alarms in existing portions of a building.** Whenever an addition is made to a building or structure of a Group R-3 or R-4 occupancy, the existing building shall be provided with smoke alarms as required by the *International Building Code* or *International Residential Code* as applicable.

2. Delete without substitution:

~~**SECTION 905**~~
~~**ACCESSIBILITY**~~

~~**905.1 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 Section 506.2 for accessible routes.~~

~~**SECTION 906**~~
~~**ENERGY CONSERVATION**~~

~~**906.1 Minimum requirements.** Additions to existing buildings or structures may be made to such buildings or structures without making the entire building or structure comply with the requirements of the *International Energy Conservation Code*. The addition shall conform to the requirements of the *International Energy Conservation Code* as they relate to new construction only.~~

Reason: The ICC Board established the Ad Hoc Committee on Existing Buildings to evaluate and further refine the IEBC in response to issues raised by the membership over the past couple of code development cycles. The key issues being: the need for more options to address the use and re-use of existing buildings, including the use of the current provisions in the IBC; how to better coordinate the IEBC with the other I-Codes; a review and clarification of specific provisions in the current IEBC; and the mechanism by which code development maintenance and the necessary coordination of provisions can best be achieved.

This proposal focuses on the clarification of the addition provisions of Chapter 9 of the IEBC. A section-by-section discussion follows:

901.1: There is no need for a laundry list of disciplines, it is better covered by a reference to the I-Codes.

904.1: This section is redundant with current section 901.1 which requires the addition to comply with the new construction requirements of the applicable I-Code. In this case it is the smoke alarm provisions.

905: This section is redundant with current section 901.1 which requires the addition to comply with the new construction requirements of the applicable I-Code. In this case it is the accessibility provisions.

906: This section is redundant with current section 901.1 which requires the addition to comply with the new construction requirements if the applicable I-Code. In this case it is the energy provisions.

Cost Impact: None

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

EB60-04/05

1001.2, 1006.3 (New)

Proponent: Raymond J. Andrews, R.A., NYS Department of State, Albany, NY, representing Department of State, Codes Division

1. Revise text as follows:

1001.2 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:

1. Each required safety feature that is in compliance with the provisions of this chapter. ~~and~~
2. Where compliance with other chapters of these provisions would be damaging to the contributing historic features.
3. The report shall demonstrate how any alternative provided to meet a provision of this code will insure an equivalent level of safety.
4. For buildings in ~~high~~ seismic ~~zones,~~ design category E and F:
   4.1 A structural evaluation describing, at minimum, a complete load path and other earthquake-resistant features ~~shall be prepared. In addition, the report shall describe~~
   4.2 Identification of where ~~each feature that is not in~~ compliance with ~~these~~ the seismic provisions of other chapters would damage the historic character or contributing features ~~and shall demonstrate how the intent of these provisions is complied with in providing an equivalent level of safety~~.

2. Add new text as follows:

1006.3 Seismic. Where compliance with the provisions of this code would damage historic character or contributing historic features identified in Section 1001.2, alternative methods in accordance with Section 104.11 are permitted to be used.

Reason: The purpose of this change is to clarify the historic building section that deals with reports. Currently the section explains the intent of the report and lists what the report should include. It also requires a description of non-complying features and their alternatives. It appears that the report section allows alternative methods of compliance which could lead to confusion.

This section should clarify the requirements of the historic report and leave alternative compliance methods in their respective sections of the chapter. The word repair has also been eliminated since it is a maintenance item and would not trigger the scrutiny of a historic report.

The proposal would also eliminate the term "high seismic zones" which is not found in the IBC and replace it with appropriate design categories.

Section 1006.3 is proposed to specifically address alternative methods of compliance for historic buildings which is addressed in the 1001.2 Report but not provided for in the structural section.

Cost Impact: None

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

EB61-04/05
Chapter 12

Proponent: Greg Wheeler, C.B.O., Chair, ICC Ad Hoc Committee on Existing Buildings

Revise as follows:

CHAPTER ~~12~~ 13
PERFORMANCE COMPLIANCE ALTERNATIVES

SECTION ~~1201~~ 1301
GENERAL

~~1201.1~~ 1301.1 Scope. The provisions of this chapter shall apply to the alteration, repair, addition, change of occupancy of existing structures, including historic and moved structures, as referenced in Section 101.5.3. The provisions of this chapter are intended to maintain or increase the current degree of public safety, health, and general welfare in existing buildings while permitting repair, alteration, addition and change of occupancy without requiring full compliance with Chapters ~~4 through 10~~ 3 through 11, except where compliance with other provisions of this code is specifically required in this chapter.

1301.1.1 Compliance with other alternatives. Alterations, repairs, additions and changes of occupancy to existing structures shall comply with the provisions of this chapter or with one of the alternatives provided in Section 101.5.

(Renumber remainder of current Chapter 12)

Reason: The ICC Board established the Ad Hoc Committee on Existing Buildings to evaluate and further refine the IEBC in response to issues raised by the membership over the past couple of code development cycles. The key issues being: the need for more options to address the use and re-use of existing buildings, including the use of the current provisions in the IBC; how to better coordinate the IEBC with the other I-Codes; a review and clarification of specific provisions in the current IEBC; and the mechanism by which code development maintenance and the necessary coordination of provisions can best be achieved.

This proposal is a coordination change with the proposal to Section 101 - focusing on expanding the options afforded both the designer and enforcing agency with respect to existing buildings. A section-by-section discussion follows:

1301.1: Coordinates the provisions of Chapter 1 with the performance compliance alternative referenced in Section 101.5.3.

1301.1.1: This text is added for the benefit of the user to let them know that the provisions of Chapter 13 are only one of three options provided for in the IEBC.

Cost Impact: None

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

EB62-04/05
1201.6.11

Proponent: Ken Schoonover, KMS Associates, Inc., Lansing, IL

Revise as follows:

1201.6.11 Means-of-egress capacity and number. Evaluate the means-of-egress capacity and the number of exits available to the building occupants. In applying this section, the means of egress are required to conform to ~~Sections 1013 of the International Building Code (with the exception of Section 1015), 1003 of the International Building Code (except that the minimum width required by this section shall be determined solely by the width for the required capacity in accordance with Table 1005.1 of the International Building Code), 1017, and 1023~~ the following sections of the International Building Code: 1003.7, 1004, 1005.1, 1013.2, 1013.3, 1014.2, 1018, 1023.1, 1023.2, 1023.6, 1024.2, 1024.3, 1024.4 and 1025. The number of exits credited is the number that is available to each occupant of the area being evaluated. Existing fire escapes shall be accepted as a component in the means of egress when conforming to Section 605.3.1.2. Under the categories and occupancies in Table 1201.6.11, determine the appropriate value and enter that value into Table 1201.7 under Safety Parameter 1201.6.11, Means-of-Egress Capacity, for means of egress and general safety.

Reason: There is a significant discrepancy in this section compared to the original text of the BOCA National Building Code (BNBC) from which Chapter 12 was taken. This section requires compliance with certain new construction egress requirements as a mandatory condition of using this alternative evaluation method for code compliance. However, the sections of the IBC that are referenced, along with their cross-references to other IBC sections, encompass virtually all of IBC Chapter 10. The IEBC references Sections 1013 (which requires compliance with 1003 through 1012 and 1014 through 1016); 1003 (which requires compliance with 1003 through 1012); 1017 (which requires compliance with 1003 through 1012 and 1018 through 1022); and 1023. The only sections of IBC Chapter 10 not referenced are 1024 and 1025, which, in part, were required under the original BNBC. This is dramatically different than the original text of the BOCA National Building Code (BNBC) from which this was taken and the differences do not appear to have been deliberate.

In the original development of the IBC, the General Subcommittee, on which I was staff liaison for BOCA, intended to simply lift the provisions from the BNBC and drop them into the IBC without any substantive change. Editorial changes to reflect the section numbering in the IBC were of course necessary. The translation of the BNBC Chapter 10 references to the comparable provisions of IBC Chapter 10 (which had a significantly different format) does not appear to have been accurate.

Regardless, this parameter of the evaluation method only ever intended to mandate compliance with a modest set of new construction egress provisions in order to have minimally acceptable conditions in an existing building. Building codes historically have never mandated complete upgrade of the entire means of egress in existing buildings to new construction requirements. It is not feasible to do so, especially in older buildings, and it is not necessary in order to have reasonably safe existing buildings. The IFC establishes the level of compliance that is deemed acceptable in existing buildings that do not undergo alterations, repairs, additions, etc., and that level of compliance is less than new construction requirements (see IFC 1026 and 1027). IEBC Chapter 12 already requires compliance with IFC (see Section 1201.3.2), which is appropriate and consistent with the original concept. It was only intended to marginally step that up as a condition of this parameter's role in providing positive points that can offset negative points in the other 18 evaluation parameters. Having to comply with IBC Sections 1003 through 1023 as a condition of this evaluation method is overkill and will probably have the effect of eliminating Chapter 12 as a viable alternative for many projects.

1999 BNBC Section 3408.6.11 required compliance with "…Sections 1006.0 (with the exception of Section 1006.5), 1008.0, 1009.0 (except that the minimum width required by this section shall be determined solely by the width for the required capacity in accordance with Table 1009.2), 1010.0, 1020.0 and 1025.0." A comparison of the provisions is provided as follows. This change proposes to require compliance with the same new construction provisions of the IBC that were originally required in the 1999 BNBC.

1999 BNBC	2003 IBC
1006.2.1: Egress through adjoining spaces	1013.2
1006.2.2: Assembly buildings-main exit	1024.2, 1024.3
1006.2.3: Skating rinks-below grade	No equiv. text
1006.2.4: Foyers in auditoriums	1024.4
1006.3: Exit discharge-required	1023.1, 1023.6
1006.3.1: Level of Exit Discharge protection (from below)	No equiv. text
1006.4 Remoteness of exits	1014.2
1006.6: Elevators, escalators not part of MOE	1003.7
1006.7: Common path of travel	1013.3
1008: Occupant load calculation	1004 (all)
1009: MOE width-egress capacity only	1005.1
1010: Number of exits	1018, 1025
1020: Exit stairways discharging into lobbies, passageways and vestibules	1023.1, 1023.2
1025: Fire escapes	Covered in 4th sentence

Cost Impact: None

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

EB63-04/05
1305.2

Proponent: James N. Bartl, AIA,, James Tschupp, AIA, representing LUESA, Mecklenburg County Code Enforcement NC; City of Raleigh Inspections, NC

Revise as follows:

1305.2 Maintenance of exits. Required means of egress shall be maintained at all times during alterations, construction and demolition, repairs ~~and~~ or additions to any building.

Reason: The proposed change to this section will align the IEBC with similar language found in 2003 IFC section 1411.2 for maintaining exits during all aspects of construction.

Analysis: The 2003 IFC Section 1411.2 reads as follows:

1411.2 Maintenance. Required means of egress shall be maintained during construction and demolition, remodeling or alterations and additions to any building.

Exception: Approved temporary means of egress systems and facilities.

Cost Impact: None

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

EB64-04/05
Appendix A102.1

Proponent: Michael Valley, Magnusson Klemencic Associates, Seattle, WA, representing NCSEA/Structural Engineers Association of Washington

Revise as follows:

A102.1 General. The provisions of this chapter shall apply to all existing buildings having at least one unreinforced masonry bearing wall. The elements regulated by this chapter shall be determined in accordance with Table A1–A. Except as provided herein, other structural provisions of the Building Code shall apply. This chapter does not ~~require~~ apply to alteration of existing electrical, plumbing, mechanical or fire–safety systems.

Reason: Clarification of scope. It is not that this chapter does or does not require alteration to nonstructural systems - it simply does not contain any provisions to do so.

Cost Impact: None

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

EB65-04/05
A102.2

Proponent: Michael Valley, Magnusson Klemencic Associates, Seattle, WA, representing NCSEA/Structural Engineers Association of Washington

Revise as follows:

A102.2 Essential and hazardous facilities. The provisions of this chapter ~~are~~ shall not ~~intended to~~ apply to the strengthening of buildings or structures in ~~Occupancy Categories 1 and 2 of Table 16–K of the 1997 Uniform Building Code when located in Seismic Zones 2B, 3 and 4, or in Seismic Use Groups II and III, where~~ Occupancy Category III when assigned to Seismic Design Category ~~ies~~ C, D, or E ~~and F~~ or buildings or structures in Occupancy Category IV. ~~as defined in the 2003 International Building Code are required.~~ Such buildings or structures shall be strengthened to meet the requirements of the *International Building Code* for new buildings of the same occupancy category or other such criteria that have been established by the jurisdiction.

Reason: Remove references to UBC and make the first part of the first sentence into mandatory code language. Since this chapter is a hazard reduction document, it shouldn't apply to buildings in SUG III regardless of seismic hazard. Also, SDC F would never apply to SUG II buildings. Proposal also replaces Seismic Use Group with equivalent Occupancy Category for consistency with IBC Table 1604.5. (ASCE 7-05 uses Occupancy Category rather than SUG.)

Cost Impact: None

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

EB66-04/05
A103, A104, A106.3.2, A108.1, A108.2, A113.9, Table A1-G

Proponent: James A. Miller, S.E., Curry Price Court, San Diego, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

1. Delete definitions without substitution:

SECTION A103
DEFINITIONS

For the purpose of this chapter, the applicable definitions in the Building Code shall also apply.

~~**NEHRP RECOMMENDED PROVISIONS.** The 1997 edition of NEHRP Recommended Provisions for Seismic Regulations for New Buildings, issued by the Federal Emergency Management Agency.~~

~~**UNIFORM BUILDING CODE.** The 1997 Uniform Building Code (UBC).~~

2. Revise as follows:

SECTION A104
SYMBOLS AND NOTATIONS

For the purpose of this chapter, the following notations supplement the applicable symbols and notations in the Building Code.

S_{DS} = Design spectral acceleration at short period, in g units. ~~$S_{DS} = 2.5C_a$ for use in UBC.~~

SD1 = Design spectral acceleration at 1-second period, in g units. ~~$S_{D1} = C_v$ for use in UBC.~~

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

Exception: ~~In other than Seismic Zone 4, or where S_{D1} exceeds 0.3g,~~ Veneer wythes anchored as specified in the Building Code and made composite with backup masonry may be used for calculation of the effective thickness, where S_{D1} exceeds 0.3.

A108.1 Values.

1. Strength values for existing materials are given in Table A1–D, and for new materials, in Table A1–E.
2. ~~Strength values not specified herein or in the Building Code may be as specified in the NEHRP Recommended Provisions.~~
3. ~~2.~~ Capacity reduction factors need not be used.
4. ~~3.~~ The use of new materials not specified herein shall be based on substantiating research data or engineering judgment, with the approval of the building official.

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

1. and 2. **(No change to current text or Equations A1-4 and A1-5)**
3. When f'_m has been estimated by categorization of the units and mortar in accordance with IBC Section 2105.2.2.1 ~~or UBC Section 2105.3.4~~, the unreinforced masonry shear strength, v_m, shall not exceed 200 pounds per square inch (1380 kPa) or the lesser of the following:

(No change to Equation A1-6)

A113.9 Truss and beam supports. Where trusses and beams other than rafters or joists are supported on masonry, independent secondary columns shall be installed to support vertical loads of the roof or floor members.

Exception: Secondary supports are not required where S_{D1} is less than 0.3g. ~~(Seismic Zones 1, 2A and 2B for the UBC)~~.

TABLE A1-G
MAXIMUM HEIGHT-TO-THICKNESS RATIOS
FOR ADOBE OR STONE WALLS

	~~SEISMIC ZONE~~ S_{D1}		
	~~2B~~ $0.13g \le S_{D1} < 0.25g$	~~3~~ $0.25g \le S_{D1} < 0.4g$	~~4~~ $S_{D1} \ge 0.4g$

(Portions of table not shown do not change)

Reason: The purpose of this code change is to eliminate references to specific codes and code sections other than the *International Building Code*. Note that referenced Uniform Building Code (UBC) standards remain.

Cost Impact: None

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

EB67-04/05

A105.4, A205.4, A408.1, A505.3 (New)

Proponent: Michael Valley, Magnusson Klemencic Associates, Seattle, WA, representing Structural Engineers Association of Washington

1. Delete and substitute as follows:

~~**A105.4 Structural observation.** Structural observation shall be provided if required by the building official for structures regulated by this chapter. The owner shall employ the engineer or architect responsible for the structural design, or another engineer or architect designated by the engineer or architect responsible for the structural design, to perform structural observation as defined in the Building Code. Observed deficiencies shall be reported in writing to the owner's representative, special inspector, contractor and the building official. The structural observer shall submit to the building official a written statement that the site visits have been made and shall identify any reported deficiencies that, to the best of the structural observer's knowledge, have not been resolved.~~

A105.4 Structural observation, testing, and inspection. Structural observation, as defined in Section 1702 of the *International Building Code*, shall be required for all structures in which seismic retrofit is being performed in accordance with this chapter. Structural observation shall include visual observation of work for conformance with the approved construction documents and confirmation of existing conditions assumed during design.

Structural testing and inspection for new construction materials shall be in accordance with the building code except as modified by this chapter.

~~**A205.4 Structural observation.** Structural observation shall be provided where required by the Building Code for all structures regulated by this chapter. The owner shall employ the engineer or architect responsible for the structural design, or another engineer or architect designated by the engineer or architect responsible for the structural design, to perform structural observations as defined in the Building Code. Observed deficiencies shall be reported in writing to the owner's representative, special inspector, contractor and the building official. The structural observer shall submit to the building official a written statement that the site visits have been made and shall identify any reported deficiencies that, to the best of the structural observer's knowledge, have not been resolved.~~

A205.4 Structural observation, testing, and inspection. Structural observation, as defined in Section 1702 of the *International Building Code*, shall be required for all structures in which seismic retrofit is being performed in accordance with this chapter. Structural observation shall include visual observation of work for conformance with the approved construction documents and confirmation of existing conditions assumed during design.

Structural testing and inspection for new construction materials shall be in accordance with the building code except as modified by this chapter.

~~**A408.1 Structural observation.** All structures regulated by this chapter require structural observation. The owner shall employ the engineer or architect responsible for the structural design, or another engineer or architect designated by the engineer or architect responsible for the structural design, to perform structural observation as defined in the UBC.~~

A408.1 Structural observation, testing, and inspection. Structural observation, as defined in Section 1702 of the *International Building Code*, shall be required for all structures in which seismic retrofit is being performed in accordance with this chapter. Structural observation shall include visual observation of work for conformance with the approved construction documents and confirmation of existing conditions assumed during design.

Structural testing and inspection for new construction materials shall be in accordance with the building code except as modified by this chapter.

2. Add new text as follows:

A505.3 Structural observation, testing, and inspection. Structural observation, as defined in Section 1702 of the *International Building Code*, shall be required for all structures in which seismic retrofit is being performed in accordance with this chapter. Structural observation shall include visual observation of work for conformance with the approved construction documents and confirmation of existing conditions assumed during design.

Structural testing and inspection for new construction materials shall be in accordance with the building code except as modified by this chapter.

Reason: This is primarily to provide consistency among the GSREB chapters and avoid duplication of specific requirements contained in the IBC. All 5 chapters of the GSREB currently contain different requirements for structural observation. The requirements are as follows:

Chapter A1: Sec A105.4 -- structural observation if required by the "building official"
Chapter A2: Sec A205.4 -- structural observation if required by the "building code"
Chapter A3: No requirements for observation, but includes inspection by building official (sec A304.5)
Chapter A4: Sec A408.1 -- structural observation always required
Chapter A5: Not mentioned at all in chapter

As currently specified in Chapter A4, structural observation is required for all structures undergoing seismic retrofit. This requirement is appropriate considering the potential for unforeseen conditions and existing conditions that are different from expected. This notion is

consistent with the language in the draft commentary to Chapter A4 and with the requirements in FEMA 356 Section 2.7. With this in mind, the proposal takes the text of GSREB Section A408.1, modifies it to emphasize the significance of observation in existing buildings, removes administrative requirements that are contained in Chapter 17 of the IBC, and applies the text consistently to Chapters A1, A2, A4, and A5. This is an editorial change to Chapter A4, and could be an editorial or substantial revision to Chapters A1, A2, and A5 depending on how the structural observation requirements would have been applied based the current version of the GSREB chapters and the requirements of IBC Section 1709.1.

The current requirements in Chapter A3 are appropriate for this construction type, since the seismic retrofit could be performed without a design professional and that chapter does require inspection by the building official.

Regarding structural inspections and testing, there are some requirements related to specific materials covered by the chapters, but there is not a general direct reference to the building code for testing and inspection of new construction materials in existing buildings. Therefore, this proposal provides such a reference in Chapters A1, A2, A4, and A5. This is not considered a substantial change since it could be inferred that the testing and inspection requirements of the building code would apply to new construction, but the reference is somewhat vague.

Cost Impact: None

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

EB68-04/05
A110.2, A110.3, A111.2

Proponent: James A. Miller, S.E., Curry Price Court, San Diego, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

1. Revise as follows:

A110.2 Lateral forces on elements of structures. Parts and portions of a structure not covered in Sections A110.3 ~~and A110.4~~ shall be analyzed and designed per the current Building Code, using force levels defined in Section A110.1.

Exceptions:

1. Unreinforced masonry walls for which height–to–thickness ratios do not exceed ratios set forth in Table A1–B need not be analyzed for out–of–plane loading. Unreinforced masonry walls that exceed the allowable h/t ratios of Table A1–B shall be braced according to Section A113.5.
2. Parapets complying with Section A113.6 need not be analyzed for out–of–plane loading.
3. Walls shall be anchored to floor and roof diaphragms in accordance with Section A113.1.

2. Delete without substitution:

~~**A110.3 Out-of–plane loading for URM walls.** Unreinforced masonry walls for which height–to-thickness ratios do not exceed the ratios set forth in Table A1–B need not be analyzed for out–of–plane loading. Unreinforced masonry walls that exceed the allowable h/t ratios of Table A1–B shall be braced according to Section A113.5. Parapets of such walls that comply with Section A113.6 need not be analyzed for out–of–plane loading. Walls shall be anchored to floor and roof diaphragms in accordance with Section A113.1.~~

(Renumber subsequent sections)

3. Revise as follows:

A111.2 Lateral forces on elements of structures. With the exception of the ~~diaphragm~~ provisions in Sections A111.4 through A111.7, elements of structures shall comply with Sections A110.2 through ~~A110.5~~ A110.4.

Reason: The purpose of this code change is to eliminate duplicate provisions, see exception in A110.2, and better clarify the provisions in Sections A110 and A111.

Cost Impact: None

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

EB69-04/05
A202

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

SECTION A202
SCOPE

The provisions of this chapter shall apply to wall anchorage systems that resist out-of-plane forces for all buildings ~~in Seismic Zones 2B, 3 and 4, or~~ where Seismic Design Categories C, D, E and F are required. The date of applicability for retrofit shall be determined by the building official. Buildings designed under building codes in effect after the adoption of the 1997 edition of the Uniform Building Code or the adoption of the BOCA National Building Code or Standard Building Code that use the 1997 edition of the NEHRP Recommended Provisions for Seismic Regulations, are considered to comply with these provisions.

Reason: Editorial change. Reference to seismic zones is no longer necessary as the UBC is no longer a reference document for appendix chapters.

Analysis: ICC records indicate that the UBC is a referenced standard to the appendix.

Cost Impact: None

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

EB70-04/05
A202

Proponent: Michael Valley, Magnusson Klemencic Assoicates, Seattle, WA, representing NCSEA/Structural Engineers Association of Washington

Delete and substitute as follows:

SECTION A202
SCOPE

~~The provisions of this chapter shall apply to wall anchorage systems that resist out-of-plane forces for all buildings in Seismic Zones 2B, 3 and 4, or where Seismic Design Categories C, D, E and F are required. The date of applicability for retrofit shall be determined by the building official. Buildings designed under building codes in effect after the adoption of the 1997 edition of the Uniform Building Code or the adoption of the BOCA National Building Code or Standard Building Code that use the 1997 edition of the NEHRP Recommended Provisions for Seismic Regulations, are considered to comply with these provisions.~~

The provisions of this chapter shall apply to wall anchorage systems that resist out-of-plane forces in existing reinforced concrete or reinforced masonry buildings with flexible diaphragms. Wall anchorage systems that were designed and constructed in accordance with the 1997 *Uniform Building Code* or the 2000 and subsequent editions of the *International Building Code* shall be deemed to comply with these provisions.

Reason: Editorial change: Clarify applicability language in first sentence of the old section. This chapter should be applicable to buildings in any SDC. This section refers to the Building Code for wall anchorage requirements (see Section A206.1), and the Building Code contains anchorage requirements for all SDC. Therefore, buildings in all SDC could potentially require retrofit to achieve the seismic performance basis of this chapter. Date of applicability requirement is unclear, but appears to be administrative and therefore should not be in this appendix. Clarify last sentence of the existing section to cover only wall anchorage and to require that the anchorage systems meet the referenced codes both in design and construction. Technical change: to be consistent with the "Benchmark Buildings" criteria of ASCE 31 (Sec 3.2), eliminate reference to the SBC and NBC which do not appear to be applicable benchmarks for these buildings. Add reference to the 2000 IBC, which is an applicable benchmark per ASCE 31.

Cost Impact: None

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

EB71-04/05
A203

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

SECTION A203
DEFINITIONS

For the purpose of this chapter, the applicable definitions in Chapters 16, 19, 21, 22 and 23 of the ~~1997 Uniform~~ *International Building Code* and the following shall apply:

(No change to definitions)

Reason: Editorial change. The *International Building Code* is preferred and intended.

Cost Impact: None

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

EB72-04/05
A206.2

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

A206.2 Special requirements for wall anchorage systems. The steel elements of the wall anchorage system shall be designed in accordance with the Building Code without the use of the 1.33 short duration allowable stress increase when using allowable stress design. A load increase of 1.4 shall be used when designing with the Uniform Building Code for allowable stress design. No load increase is required when using the *International Building Code*.

Wall anchors shall be provided to resist out–of–plane forces, independent of existing shear anchors.

Exception: Existing cast–in–place shear anchors may be used as wall anchors if the tie element can be readily attached to the anchors and if the engineer or architect can establish tension values for the existing anchors through the use of approved as–built plans or testing and through analysis showing that the bolts are capable of resisting the total shear load (including dead load) while being acted upon by the maximum tension force due to an earthquake. Criteria for analysis and testing shall be determined by the building official.

Expansion anchors are only allowed with special inspection and approved testing for seismic loading. Attaching the edge of plywood sheathing to steel ledgers is not considered compliant with the positive anchoring requirements of this chapter. Attaching the edge of steel decks to steel ledgers is not considered as providing the positive anchorage of this chapter unless testing and/or analysis are performed to establish shear values for the attachment perpendicular to the edge of the deck. ~~Any installation~~ Where steel deck is used as a wall anchor system, the existing connections shall be subject to field verification and the new connections shall be subject to special inspection.

Reason: The intent is to clarify that the last sentence applies to using steel deck as a wall anchor system. Special inspection is not possible for existing connections. Only field verification is possible. New connections added to strengthen the deck are subject to special inspection.

Cost Impact: None

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

EB73-04/05
A206.3

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

A206.3 Development of anchor loads into the diaphragm. Development of anchor loads into roof and floor diaphragms shall comply with ~~Chapter 16 of~~ the Building Code using horizontal forces that are 75% of those used for new construction.

Exception: If continuously tied girders are present, the maximum spacing of the continuity ties is the greater of the girder spacing or 24 feet (7315 mm).

In wood diaphragms, anchorage shall not be accomplished by use of toenails or nails subject to withdrawal. Wood ledgers, top plates or framing shall not be used in cross–grain bending or cross–grain tension. The continuous ties required in Chapter 16 of the Building Code shall be in addition to the diaphragm sheathing.

Lengths of development of anchor loads in wood diaphragms shall be based on existing field nailing of the sheathing unless existing edge nailing is positively identified on the original construction plans or at the site.

If collectors are not present at re–entrant corners, they shall be provided. New collectors shall be designed for the capacity required to develop into the diaphragm a force equal to the lesser of the rocking or shear capacity of the re–entrant wall, or the tributary shear. The capacity of the collector need not exceed the capacity of the diaphragm. A connection shall be provided from the collector to the re–entrant wall to transfer the full collector force (load). If a truss or beam other than a rafter or purlin is supported by the re–entrant wall or by a column integral with the re–entrant wall, then an independent secondary column is required to support the roof or floor members whenever rocking or shear capacity of the re–entrant wall is less than the tributary shear.

Reason: Clarification that loads used for the evaluation of the development of wall anchor loads into the diaphragm are the same as those used for the wall anchors.

Cost Impact: None

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

EB74-04/05
A206.3, A206.3.1 (New)

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

A206.3 Development of anchor loads into the diaphragm. Development of anchor loads into roof and floor diaphragms shall comply with Chapter 16 of the Building Code.

Exception: If continuously tied girders are present, the maximum spacing of the continuity ties is the greater of the girder spacing or 24 feet (7315 mm).

In wood diaphragms, anchorage shall not be accomplished by use of toenails or nails subject to withdrawal. Wood ledgers, top plates or framing shall not be used in cross–grain bending or cross–grain tension. The continuous ties required in Chapter 16 of the Building Code shall be in addition to the diaphragm sheathing.

Lengths of development of anchor loads in wood diaphragms shall be based on existing field nailing of the sheathing unless existing edge nailing is positively identified on the original construction plans or at the site.

A206.3.1 Collectors. If collectors are not present at re–entrant corners, they shall be provided. New collectors shall be designed for the capacity required to develop into the diaphragm a force equal to the lesser of the rocking or shear capacity of the re–entrant wall, or the tributary shear. The capacity of the collector need not exceed the capacity of the diaphragm to deliver loads to the collector. A connection shall be provided from the collector to the re–entrant wall to transfer the full collector force (load). If a truss or beam other than a rafter or purlin is supported by the re–entrant wall or by a column integral with the re–entrant wall, then an independent secondary column is required to support the roof or floor members whenever rocking or shear capacity of the re–entrant wall is less than the tributary shear.

Reason: Editorial change. It is not intended that the capacity of the diaphragm be equated to the capacity of the diaphragm (capacity per foot times length) when the diaphragm delivers loads to the diaphragm from two different directions (e.g. at an interior shear wall). This change is intended to clarify this.

Also, to improve usability, it is proposed that collectors should be in a section separate from development of wall anchors, either as A206.3.1 as shown or as A206.4 with subsequent sections renumbered.

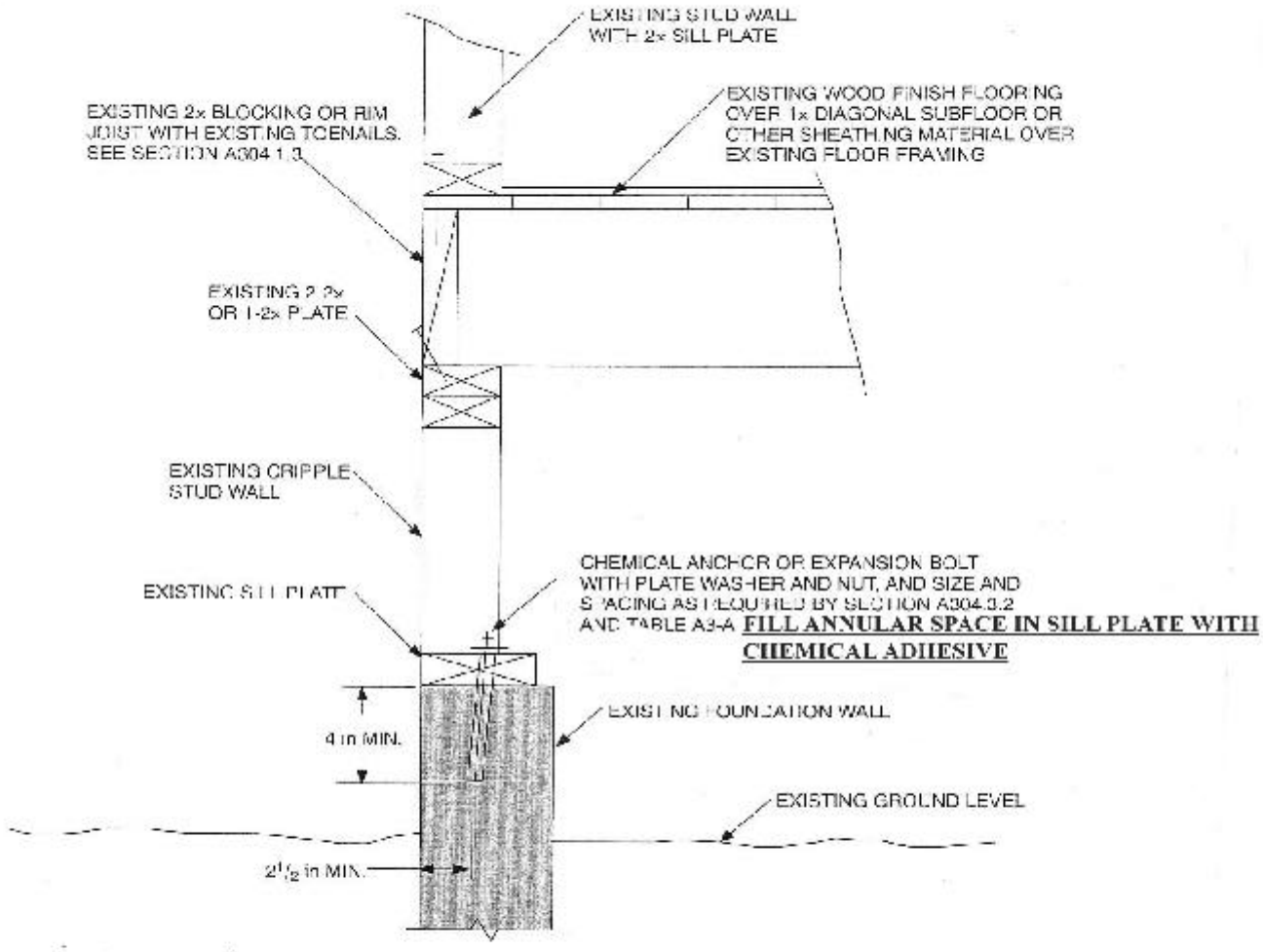
Cost Impact: None

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

EB75-04/05
Figure A3-3

Proponent: Fred Turner, California State Seismic Commission, representing NCSEA, SEAOC, SEAOCC

Revise figure as follows:



For SI: 1 inch = 25.4 mm

NOTES:

1. Plate washers shall comply with the following:
   ½ in. anchor or bolt 2 in. × 2 in. × 5/16 in.
   ⅝ in. anchor or bolt 2 in. × 2 in. × 5/16 in.
2. See Figure A3-5 or A3-6 for cripple wall bracing.

FIGURE A3-3—SILL PLATE BOLTING TO EXISTING FOUNDATION

Reason: Some approved expansion bolts and chemical anchors require holes to be drilled into existing sill plates that are significantly larger in diameter than the bolt diameter. This could allow for the sill plates to slip excessively and cause damage in the building system during response to ground shaking before the bolts can engage in bearing against the sides of the holes in sill plates. The proposed change would require annular spaces between bolts and sill plates to be filled so that bolts fully bear against sill plates and slip is reduced.

Analysis: A question would be if the proposed requirement should be included in the text of Section A304.3.1 as well as in the figure.

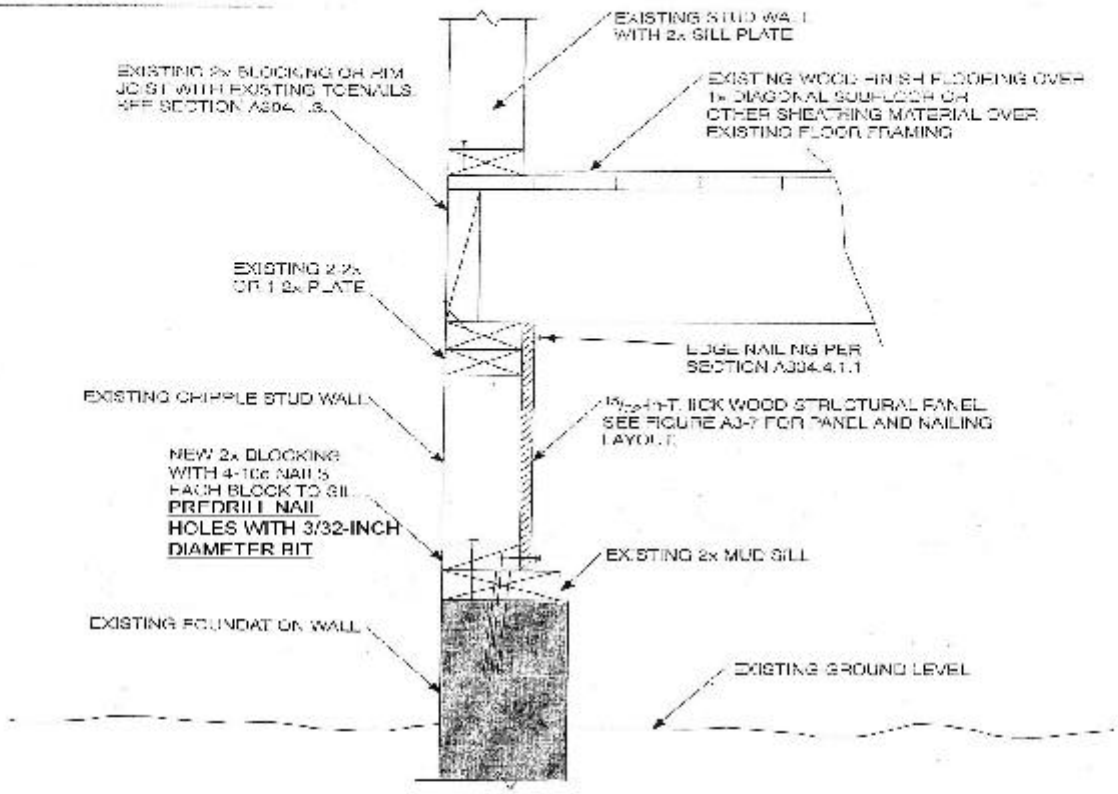
Cost Impact: This code change will increase the cost of construction.

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

EB76-04/05
Figure A3-6

Proponent: Fred Turner, California State Seismic Commission, representing NCSEA, SEAOC, SEAOCC

Revise figure as follows:



For SI: 1 inch = 25.4 mm.

NOTE: See Figure A3-3 for sill plate nailing.

FIGURE A3-6—CRIPPLE WALL BRACING WITH WOOD STRUCTURAL PANEL ON INTERIOR FACE OF CRIPPLE STUDS

Reason: New, short blocking required by Figure A3-6 has a tendency to split with multiple 10-penny nails through the broad face of the blocking. This proposal will help reduce the potential for splitting by requiring pre-drilling to approximately 75% of the diameter of the nail in accordance with NDS requirements for pre-drilling.

Analysis: A question would be if the proposed requirement should be included in the text of Section A304.4.1.1 as well as in the figure.

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

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

EB77-04/05
A301.2

Proponent: Fred Turner, California State Seismic Commission, representing NCSEA, SEAOC, SEAOCC

Revise as follows:

A301.2 Scope. The provisions of this chapter apply to light, wood–frame residential buildings that are in Seismic Design Categories D, E and F of the ~~2003 IBC~~ *International Building Code* ~~(located in Seismic Zones 3 and 4 of the UBC)~~, containing one or more of the structural weaknesses specified in Section A303.

Exception: The provisions of this chapter do not apply to the buildings, or elements thereof, listed below. These buildings or elements require analysis by an engineer or architect in accordance with Section A301.3 to determine appropriate strengthening.

1. Group R, Division 1 occupancies with more than four dwelling units.
2. Buildings with a lateral–force–resisting system using poles or columns embedded in the ground.
3. Cripple walls that exceed 4 feet (1219 mm) in height.
4. Buildings exceeding three stories in height and any three–story building with cripple wall studs exceeding 14 inches (356 mm) in height.
5. Buildings where the building official determines that conditions exist that are beyond the scope of the prescriptive requirements of this chapter.
6. ~~The provisions of this chapter do not apply to structures,~~ Buildings or portions thereof, constructed on ~~a~~ concrete slabs on grade.

The details and prescriptive provisions herein are not intended to be the only acceptable strengthening methods permitted. Alternative details and methods may be used when approved by the building official. Approval of alternatives shall be based on test data showing that the method or material used is at least equivalent in terms of strength, deflection and capacity to that provided by the prescriptive methods and materials.

The provisions of this chapter may be used to strengthen historic structures, provided they are not in conflict with other related provisions and requirements that may apply.

Reason: Clarifies and deletes outdated material. Eliminates references to a model code and seismic zones that are no longer current. Editorial removal of the edition year for the IBC and reorganization of exception 6.

Cost Impact: None

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

EB78-04/05
A301.2

Proponent: Michael Valley, Magnusson Klemencic Associates, Seattle, WA, representing NCSEA/Structural Engineers Association of Washington

Revise as follows:

A301.2 Scope. The provisions of this chapter apply to ~~light, wood–frame~~ residential buildings of light-frame wood construction ~~that are in~~ assigned to Seismic Design Category~~ies~~ C D, or E ~~and F of the 2003 IBC (located in Seismic Zones 3 and 4 of the UBC),~~ containing one or more of the structural weaknesses specified in Section A303.

Exception: The provisions of this chapter do not apply to the buildings, or elements thereof, listed below. These buildings or elements require analysis by an engineer or architect in accordance with Section A301.3 to determine appropriate strengthening.

1. Group ~~R, Division~~ R-1, R-2 or R-4 occupancies with more than four dwelling units.
2. Buildings with a lateral–force–resisting system using poles or columns embedded in the ground.
3. Cripple walls that exceed 4 feet (1219 mm) in height.
4. Buildings exceeding three stories in height and any three–story building with cripple wall studs exceeding 14 inches (356 mm) in height.
5. Buildings where the building official determines that conditions exist that are beyond the scope of the prescriptive requirements of this chapter.

The provisions of this chapter do not apply to structures, or portions thereof, constructed on a concrete slab on grade.

The details and prescriptive provisions herein are not intended to be the only acceptable strengthening methods permitted. Alternative details and methods may be used when approved by the building official. Approval of alternatives shall be based on test data showing that the method or material used is at least equivalent in terms of strength, deflection and capacity to that provided by the prescriptive methods and materials.

The provisions of this chapter may be used to strengthen historic structures, provided they are not in conflict with other related provisions and requirements that may apply.

Reason: Editorial: Revise construction type to be consistent with IBC language (see IBC Section 2302.1), and revise occupancy in exception 1 to be consistent with the IBC (see IBC Section 310.1). Note that the IBC specifies four Group R occupancies, while the UBC specified only two such divisions. The added IBC divisions are added to the exception to maintain the previous scope of this chapter based on the UBC occupancy classification.

It is not appropriate to exempt buildings assigned to SDC C from these requirements as this covers buildings in what is considered a moderate level of seismic hazard. SDC F is only associated with Occupancy Category IV, to which this chapter does not apply.

Cost Impact: None

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

EB79-04/05
A304.1.2

Proponent: Fred Turner, California State Seismic Commission, representing NCSEA, SEAOC, SEAOCC

Revise as follows:

A304.1.2 Condition of existing wood materials. All existing wood materials that will be a part of the strengthening work (sills, studs, sheathing, etc.) shall be in a sound condition and free from defects that substantially reduce the capacity of the member. A sharp instrument shall be used to probe below exposed surfaces of wood suspected of decay or infestation to assess its depth and extent.

Any wood material found to ~~contain~~ have fungus infection shall be removed and replaced with new material. Sources of moisture that cause the infection shall be removed or redirected away from wood.

Any wood material found to be infested with insects or to have been infested with insects shall be strengthened or replaced with new materials to provide a net dimension of sound wood at least equal to its undamaged original dimension.

Reason: Clarifies how to determine if decay or infestation exists by proposing to require physical probing beyond visual inspection. Requires the removal of moisture sources where a fungus infection exists because replacement alone will not arrest decay.

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

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

EB80-04/05
A304.4.2, Table A3A

Proponent: Fred Turner, California State Seismic Commission, representing NCSEA, SEAOC, SEAOCC

Revise as follows:

A304.4.2 Distribution and amount of bracing. See Table A3–A and Figure A3–10 for the distribution and amount of bracing required for each wall line. Each braced panel length must be at least two times the height of the cripple stud ~~wall but not less than 48 inches (1219 mm) in length or width~~. Where the minimum amount of bracing prescribed in Table A3–A cannot be installed along any walls, the bracing must be designed in accordance with Section A301.3.

Exception: Where physical obstructions such as fireplaces, plumbing or heating ducts interfere with the placement of cripple wall bracing, the bracing shall then be placed as close to the obstruction as possible. The total amount of bracing required shall not be reduced because of obstructions.

TABLE A3-A
SILL PLATE ANCHORAGE AND
CRIPPLE WALL BRACING

NUMBER OF STORIES ABOVE CRIPPLE WALLS	MINIMUM SILL PLATE CONNECTION AND MAXIMUM SPACING[1, 2]	AMOUNT OF BRACING FOR EACH WALL LINE[3,4,5]	
		A COMBINATION OF EXTERIOR WALLS FINISHED WITH PORTLAND CEMENT PLASTER AND ROOFING USING CLAY TILE OR CONCRETE TILE WEIGHING MORE THAN 6 PSF (287 N/m^2)	ALL OTHER CONDITIONS

(Portions of table not shown do not change)

Reason: This proposal removes an arbitrary 48 inch requirement for the length of each panel while retaining the minimum aspect ratio of 2 to 1 consistent with Table 2308.12.4 of the IBC in Seismic Design Categories D and E. It clarifies that the requirements for the amount of bracing apply to each wall line of the building.

Cost Impact: None

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

EB81-04/05

Table A3-A, Figure A3-10

Proponent: Fred Turner, California Seismic Safety Commission, representing himself

Delete and substitute as follows:

~~**TABLE A3-A**~~
~~**SILL PLATE ANCHORAGE AND**~~
~~**CRIPPLE WALL BRACING**~~

(Delete table and footnotes in their entirety)

~~**FIGURE A3-10**~~
~~**FLOOR PLAN - CRIPPLE WALL**~~
~~**BRACING LAYOUT**~~

(Delete figure in its entirety)

TABLE A3-A
SILL PLATE ANCHORS AND CRIPPLE WALL BRACING[1, 6, 7, 8]

NUMBER OF STORIES ABOVE CRIPPLE WALLS	TOTAL FLOOR AREA[2]	HEAVY OR LIGHT ROOF AND WALLS[3]	MINIMUM TOTAL NUMBER OF ½ INCH SILL PLATE ANCHORS				MINIMUM TOTAL LENGTH OF CRIPPLE WALL BRACING PER WALL LINE (FEET)	
			SEISMIC DESIGN CATEGORY				SEISMIC DESIGN CATEGORY	
			HIGH[4]		MODERATE[5]			
			TOTAL ANCHORS ALONG EACH WALL LINE	LOCATE ANCHORS NEAR STUDS AT EACH END OF BRACED PANELS[9]	TOTAL ANCHORS ALONG EACH WALL LINE	LOCATE ANCHORS NEAR STUDS AT EACH END OF BRACED PANELS[9]	HIGH[4]	MODERATE[5]
One story	1,200	Heavy	6	1	4	1	12' - 0"	8' - 0"
	1,200	Light	5	2	4	2	9' - 0"	8' - 0"
	1,500	Heavy	7	1	5	1	14' - 4"	9' - 0"
	1,500	Light	5	2	4	2	10'- 6"	8' - 0"
	2,000	Heavy	8	1	6	1	17' - 4"	11' - 0"
	2,000	Light	6	2	4	2	13' - 0"	8' - 4"
Two stories	1,800	Heavy	8	1	5	1	15' - 8"	10' - 0"
	1,800	Light	6	2	4	2	12' - 4"	8'- 0"
	2,400	Heavy	9	1	6	1	19'- 0"	12' - 4"
	2,400	Light	7	2	5	2	15' - 0"	9' - 6"
	3,000	Heavy	11	1	7	1	22' - 6"	14' - 4"
	3,000	Light	9	2	6	2	17' - 8"	11' - 4"
Three stories	2,700	Heavy	10	1	7	1	21' - 6"	13' - 8"
	2,700	Light	8	1	6	1	17' - 4"	11' 0"
	3,600	Heavy	13	1	8	1	26' - 4"	16' - 8"
	3,600	Light	10	1	7	1	21' - 0"	13' - 4"
	4,500	Heavy	15	1	10	1	31' - 0"	19' - 8"
	4,500	Light	12	1	8	1	25' - 0"	16' - 0"

For SI: 1 inch = 25.4 mm; 1 foot = 304.8 mm
1 square foot = 0.0929 m^2

1. Sill plate anchors shall be chemical anchors or expansion bolts spaced not more than 6 feet (1829 mm) apart and in accordance with Section A304.3.1. All plate washers shall be 2 inches by 2 inches by 3/16 inch (51mm by 51mm by 4.8mm).

   For cripple wall bracing, use 5 ply 15/32-inch (12.7mm) rated plywood sheathing with 8 penny nails 4 inches (102 mm) center-to-center at all panel edges and 12 inches (305 mm) center-to-center for field nailing at intermediate studs.

2. Floor areas shown are for total livable space (including all stories) in square feet.

3. Light construction is limited to a building that has lightweight roofing of wood shakes, wood shingles, composition shingles, asphalt shingles or metal, not weighing more than 5 pounds per square foot (239 N/m^2). Exterior walls for light construction shall be limited to wood panels, board siding or similar lightweight finishes.

   Heavy construction shall apply when any one of the following are present:

   a. Exterior walls with exterior plaster finish.
   b. Roofing consisting of concrete tile or clay tile weighing more than 5 pounds per square foot (239 N/m^2) but not more than 11 pounds per square foot (526 N/m^2) . Roofing exceeding 11 pounds per square foot (526 N/m^2) is permitted to be considered on a case by case basis by the code official.

4. High seismic design category is D2 and greater as defined in the *International Residential Code*.
5. Moderate seismic design category is D1 or less as defined in the *International Residential Code*.
6. Each braced panel length shall be at least two times the height of the cripple wall. All braced panels along a wall shall be nearly equal in length and shall be nearly equal in spacing along the length of the wall. Braced panels closest to the ends of wall lines shall be located as near to the ends as possible.
7. All wall lines at each end of the building shall have cripple wall bracing. Wall lines that are shorter in length than the length of cripple wall bracing required shall be fully braced insofar as practicable while allowing for obstructions and ventilation openings. Intermediate wall lines that are not located at the end of the building that are 12'-0" or less in length shall not require sill anchors and cripple wall bracing.
8. Underfloor ventilation openings are required in accordance with Section A304.4.4.
9. Locate sill bolts with plate washers within 6 inches (152 mm) of each stud at the ends of each braced panel. Where 2 bolts are specified, locate one bolt on each side of the stud except at corners where one bolt is required.

Reason: The cripple wall lengths in Table A3-A are currently based on the percentage of wall length that doesn't necessarily relate directly to the seismic forces acting on the walls. This proposal is a significant improvement by requiring the cripple wall braced length to be based on the dwelling floor area, which more closely correlates with building weights. This proposal also includes refinements for high and moderate seismicity so that the length of bracing more directly relates to the seismic forces that the walls are intended to resist. This refinement will still allow homeowners and contractors without the aid of design professionals to proportion appropriate seismic retrofits.

Sill bolt spacing is revised to be consistent with IBC 2308.6.

Figure A3-10 is proposed to be deleted because it is no longer consistent with Table A3-A and it is commentary.

Analysis: The last sentence in Footnote 3b appears to be redundant based on Section 104.11, Alternative materials, design and methods of construction, and equipment. Livable space (see footnote 2) is not a defined term. Can this make the table unenforceable?

Cost Impact: None

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

EB82-04/05
A401.2

Proponent: Michael Valley, Magnusson Klemencic Associates, Seattle, WA, representing NCSEA/Structural Engineers Association of Washington

Revise as follows:

A401.2 Scope. The provisions of this chapter shall apply to all existing multiunit residential buildings of wood construction ~~wood–frame buildings,~~ or portions thereof, ~~that are used as hotels, lodging houses, congregate residences or apartment houses~~ where:

1. The ground floor portion of the wood–frame structure contains parking or other similar open floor space that causes soft, weak or open–front wall lines as defined in this chapter, and there exists one or more levels 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 levels above.

This chapter is applicable to structures assigned to Seismic Design Category C, D, or E. ~~Seismic Hazard Zones where SD1 is 0.3g or higher, or in Seismic Zones 3 and 4 of the UBC.~~

Reason: Revise construction type to be consistent with IBC language (see IBC Section 310.1). Change applicability to be based on SDC consistent with the other Appendix chapters. However, buildings assigned to SDC A and B could be exempted from the requirements of this chapter. It is not appropriate to exempt buildings assigned to SDC C from these requirements as this covers buildings in what is considered a moderate level of seismic hazard. SDC F is only associated with Occupancy Category IV, to which this chapter does not apply.

Analysis: The committee needs to make its intent clear with respect to the last paragraph of Section A401.2 as it relates to this change and to EB89-04/05.

Cost Impact: None

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

EB83-04/05

A401.2, A402, A403.2, A403.5, A403.6, A403.10, A404

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

A401.2 Scope. The provisions of this chapter shall apply to all existing wood–frame buildings, or portions thereof, that are used as hotels, lodging houses, congregate residences or apartment houses where:

1. The ground floor portion of the wood–frame structure contains parking or other similar open floor space that causes soft, weak or open–front wall lines as defined in this chapter, and there exists one or more ~~levels~~ 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 ~~levels~~ stories above.

This chapter is applicable to Seismic Hazard Zones where S_{D1} is 0.3g or higher, or in Seismic Zones 3 and 4 of the UBC.

SECTION A402
DEFINITIONS

Notwithstanding the applicable definitions, symbols and notations in the Building Code, the following definitions shall apply for the purposes of this chapter:

GROUND FLOOR. Any floor ~~within the wood–frame portion of a building~~ whose elevation is immediately accessible from an adjacent grade by vehicles or pedestrians. The ground floor portion of the structure does not include any ~~level~~ floor that is completely below adjacent grades.

~~**LEVEL.** A story, basement or underfloor space of a building with cripple walls exceeding 4 feet (1219 mm) in height.~~

STORY. A story as defined by the Building Code, including any basement or underfloor space of a building with cripple walls exceeding 4 feet (1200 mm) in height.

A403.2 Scope of analysis. This chapter requires the alteration, repair, replacement or addition of structural elements and their connections to meet the strength and stiffness requirements herein. The lateral–load–path analysis shall include the resisting elements and connections from the wood diaphragm above any soft, weak or open–front wall lines to the foundation soil interface or the uppermost floor or roof ~~level~~ of a Type I structure below. The top story of any building need not be analyzed. The lateral–load–path analysis for added structural elements shall also include evaluation of the allowable soil–bearing and lateral pressures in accordance with UBC Section 1805.

Exception: When an open–front, weak or soft wall line exists because of parking at the ground ~~level~~ story of a two–~~level~~story building, and the parking area is less than 20 percent of the ground floor ~~level~~ area, then only the wall lines in the open, weak or soft directions of the enclosed parking area need comply with the provisions of this chapter.

A403.5 Weak story limitation. The structure shall not exceed 30 feet (9144 mm) in height or two ~~levels~~ stories if the lower ~~level~~ story strength is less than 65 percent of the story above. Existing walls shall be strengthened as required to comply with this provision unless the weak ~~level~~ story can resist a total lateral seismic force of O_0 times the design force prescribed in Section A403.4.

The story strength for each ~~level~~ story of all other structures shall be a minimum of 80 percent of the story above.

A403.6 Story drift limitation. The calculated story drift for each retrofitted ~~level~~ story shall not exceed the allowable deformation compatible with all vertical–load–resisting elements and 0.025 times the story height. The calculated story drift shall not be reduced by the effects of horizontal diaphragm stiffness but shall be increased when these effects produce rotation. Drift calculations shall be in accordance with UBC Section 1630.9 and 1630.10.

The effects of rotation and soil stiffness shall be included in the calculated story drift when lateral loads are resisted by vertical elements whose required depth of embedment is determined by pole formulas, such as Formulas (6–1) and (6–2) in UBC Section 1806.8.2. The range of this coefficient of subgrade reaction used in the deflection calculations shall be provided from an approved geotechnical engineering report or other approved methods.

A403.10 Horizontal diaphragms. The analysis of shear demand or capacity of an existing plywood or diagonally sheathed horizontal diaphragm need not be investigated unless the diaphragm is required to transfer lateral forces from the lateral–resisting elements above the diaphragm to other lateral–resisting elements below the diaphragm because of an offset in placement of the elements.

Wood diaphragms ~~in structures that support floors or roofs~~ with stories above shall not be allowed to transmit lateral forces by rotation or cantilever except as allowed by the Building Code. However, rotational effects shall be accounted for when unsymmetric wall stiffness increases shear demands.

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

SECTION A404
GENERAL REQUIREMENTS FOR PHASED CONSTRUCTION

When the building contains three or more ~~levels~~ stories, the work specified in this chapter shall be permitted to be done in the following phases. Work shall start with Phase I unless otherwise approved by the building official. When the building does not contain the conditions shown in any phase, the sequence of retrofit work shall proceed to the next phase in numerical order.

Phase 1 Work. The first phase of the retrofit work shall include the ground floor portion of the wood structure that contains parking or other similar open floor space.

Phase 2 Work. The second phase of the retrofit work shall include walls ~~of~~ in any ~~level~~ story of wood construction with two or more ~~levels~~ stories above that are laterally braced with nonconforming structural materials.

Phase 3 Work. The third and final phase of the retrofit work shall include the remaining portions of the building up to, but not including, the top story as specified in Section A403.2.

Reason: The existing text uses "level" interchangeably with "story" and even defines "level" as "a story." This contradicts typical code language, is counter to standard usage by laymen, and is potentially confusing, since "level" can indicate a flat floor or roof. This would lead to incorrect conclusions in usages such as "a weak level with two levels above."

To correct the problem, "level" is replaced (in context) with "story," and the definition of LEVEL is replaced with a definition of STORY. The definition of GROUND FLOOR is also modified slightly for the obvious reason that the ground floor is independent of the superstructure construction.

Note: The use of "base level" and "base" in section A403.1 are not changed in order to not interfere with any current interpretations of terms specific to hillside conditions.

Cost Impact: None

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

EB84-04/05

A403.1, A405.1, A405.1.1, A405.1.2, A405.1.3

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

1. Revise as follows:

SECTION A403
ANALYSIS AND DESIGN

A403.1 General. Buildings within the scope of this chapter shall be analyzed, designed and constructed in conformance with the 1997 Uniform Building Code™ except as modified in this chapter. Prior to any analysis, an initial screening review of the buildings shall be performed as noted in Section A403.1.1. All items found to be noncompliant shall be addressed in this analysis.

No alteration of the existing lateral–force–resisting or vertical–load–carrying system shall reduce the strength or stiffness of the existing structure. When any portion of a building within the scope of this chapter is constructed on or into a slope steeper than 1 unit vertical in 3 units horizontal, the lateral–force–resisting system at and below the base level diaphragm shall be analyzed for the effects of concentrated lateral forces at the base caused by this hillside condition.

Exceptions~~:~~

~~1.~~ Buildings in which all items on the applicable checklist—Tables A4–A through A4–D—are marked compliant.

~~2. Prescriptive measures provided in Section A405 may be used in two-story buildings of no geometrical irregularity when the roof covering of the structure is of material weighing 5 pounds per square foot (240 N/m^2) or less; when the aspect ratio of the floor diaphragm meets the current code requirements; and only when deemed appropriate by the building official.~~

SECTION A405
PRESCRIPTIVE MEASURES ~~FOR WEAK STORY~~

2. Delete without substitution:

~~**A405.1 Scope.** The proposed prescriptive measures provided here are intended to reduce the earthquake~~

~~vulnerability of the structure and to reduce the possibility of collapse or partial collapse of the building in the event of a moderate to major earthquake.~~

~~**A405.1.1 Performance.** The improved earthquake performance of the structure due to the proposed prescriptive measures varies and is greatly controlled by all of the following: proximity to the fault line; soil type; weight of roof and floor above; quality of existing walls, posts and columns, and their connections to the floor diaphragm; and the quality of construction provided to comply with the prescriptive measures. The implementation of the proposed measures is not intended to improve the earthquake performance of the building above the first story.~~

3. Revise as follows:

A405.1 ~~A405.1.2~~ Limitation. These prescriptive measures shall apply only to two-story buildings and only when deemed appropriate by the code official. These ~~The proposed~~ prescriptive measures rely on rotation of the second floor diaphragm to distribute the seismic load between the side and rear walls of the ground floor open area ~~enclosing the parking area.~~ In the absence of an existing ~~The owner shall provide access to ensure that the~~ floor diaphragm ~~is~~ of wood structural panel or diagonal sheathing~~. In the absence of such a verification~~, a new wood structural panel diaphragm ~~must be applied~~ of minimum thickness of 3/4 inch (19 mm) and with 10d common nails at 6 inches (152 mm) on center shall be applied.

A405.1.1 ~~A405.1.3~~ Additional conditions. To qualify for these prescriptive measures, the following additional conditions need to be satisfied by the retrofitted structure:

1. Diaphragm aspect ratio ~~= 1.5 or less.~~ *L/W* less than 0.67, where *W* is the diaphragm dimension parallel to the soft, weak, or open-front wall line, and *L* is the distance in the orthogoal direction between that wall line and the rear wall of the ground floor open area.
2. Minimum length of side shear walls = 20 feet (6096 mm) ~~with less than 10 percent openings.~~
3. Minimum length of rear shear wall~~s~~ = 3/4 of rear wall ~~length with individual walls not having more than 10 percent openings~~.
4. No plan or vertical irregularities other than a soft, weak, or open-front wall line.
5. Roofing weight less than or equal to 5 pounds per square foot (240 N/m^2).
6. Aspect ratio of the full second floor diaphragm meets the requirements of the Building Code for new construction.

Reason: The proposal corrects and clarifies the applicability of the prescriptive measures in section A405. It also consolidates the qualifications for these measures, moving the requirements currently in A403.1 Exception 2 to A405.

The corrections are:

Removal of the words "For Weak Story" from the section title, because this section applies as well to soft and open-front conditions. (Also, while "weak story" is used in a few places throughout Chapter A4, it is not defined except by the Building Code. Only "weak wall line" is defined by Chapter A4.)

The current diaphragm aspect ratio limit of 1.5 is incorrect. 2003 IBC Section 2305.2.5 defines the relevant aspect ratio as L/W. Considering a rectangular parking area (or other open ground floor area), this provision intends to include buildings with the open-front along the long side of the rectangle, that is, with W significantly greater than L. The intention of the aspect ratio limit is to restrict the prescriptive provisions to buildings that are not prone to substantial torsion. Thus, the acceptable ratios are L/W < 0.67, not L/W < 1.5.

The clarifications are:

Deletion of sections A405.1 and A405.1.1 because they are redundant with respect to A401.1. Further, the current A405.1.1 is commentary and is potentially confusing because it suggests that the objective of A405 is different from the objective of the rest of Chapter A4. In fact, the performance objectives are the same. (Note: If A405.1 is not deleted, its title should be changed from "Scope" to "Purpose.")

The words "by the retrofitted structure" are added to the first sentence under "Additional conditions" to clarify the intent that a given structure can be made eligible for A405 by correcting any of the six listed conditions, for example, by reroofing or by adding shear wall length.

The word "proposed" is removed for obvious reasons. (Note: If A405.1 and A405.1.1 are not deleted, several incorrect uses of "proposed" should be removed from those sections as well.)

The words "enclosing the parking area" are revised because the ground floor area in question might have uses other than parking and because this area need not be physically "enclosed" at all.

In "Additional conditions" 2 and 3, the limit of "10 percent openings" is removed because such a refinement is not justified. Further, it is unclear whether the opening percentage is to be measured by length or by wall area. Since both possible interpretations have critical loopholes, it is better to leave the qualification of shear walls to the judgement of the designer and to the discretion of the building official.

Other miscellaneous clarifications to improve clarity and enforceability.

Corrections to existing wording that does not meet ICC requirements for mandatory language and terminology.

Analysis: The committee needs to make its intent clear with respect to the Section A403.1 as it relates to this change and to EB85-04/05.

Cost Impact: None

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

EB85-04/05

A403.1, A403.1.1, A403.8.1, Table A4-A, Table A4-B, Table A4-C, Table A4-D

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

1. Revise as follows:

A403.1 General. Buildings within the scope of this chapter, shall be analyzed, designed and constructed in conformance with the 1997 Uniform Building Code™ except as modified in this chapter. ~~Prior to any analysis, an initial screening review of the buildings shall be performed as noted in Section A403.1.1. All items found to be noncompliant shall be addressed in this analysis.~~

Exception: Prescriptive measures provided in Section A405 are permitted be used in two-story buildings of no geometrical irregularity when the roof covering of the structure is of material weighing 5 pounds per square foot (240 N/m^2) or less; when the aspect ratio of the floor diaphragm meets the current code requirements; and only when deemed appropriate by the code official.

No alteration of the existing lateral–force–resisting or vertical–load–carrying system shall reduce the strength or stiffness of the existing structure. When any portion of a building within the scope of this chapter is constructed on or into a slope steeper than 1 unit vertical in 3 units horizontal, the lateral–force–resisting system at and below the base level diaphragm shall be analyzed for the effects of concentrated lateral forces at the base caused by this hillside condition.

~~**Exceptions:**~~

~~1. Buildings in which all items on the applicable checklist—Tables A4–A through A4–D—are marked compliant.~~
~~2. Prescriptive measures provided in Section A405 may be used in two-story buildings of no geometrical irregularity when the roof covering of the structure is of material weighing 5 pounds per square foot (240 N/m2) or less; when the aspect ratio of the floor diaphragm meets the current code requirements; and only when deemed appropriate by the building official.~~

2. Delete Tables A4-A through A4-D in their entirety and re-letter Table A4-E as follows:

~~**TABLE A4-4 — BUILDING SYSTEM**~~

~~**TABLE A4-B — LATERAL-FORCE-RESISTING SYSTEM**~~

~~**TABLE A4-C — CONNECTIONS**~~

~~**TABLE A4-D — DIAPHRAGMS**~~

TABLE ~~A4-E~~ A4-A
ALLOWABLE VALUES FOR EXISTING MATERIALS

(No change to remainder of table or footnotes)

3. Delete without substitution:

~~**A403.1.1 Initial screening.** Prior to any analysis, an initial screening review of the buildings shall be performed.~~

~~Each of the evaluation statements on this checklist shall be marked compliant (C), noncompliant (NC), or not applicable (N/A). Compliant statements identify issues that are acceptable according to the criteria of this chapter, while noncompliant statements identify issues that require further investigation. Certain statements may not apply to the buildings being evaluated. For noncompliant evaluation statements, the design professional may choose to conduct further investigation or comply with the prescriptive requirements of this chapter.~~

4. Revise as follows:

A403.8.1 Cripple walls. ~~Unbraced~~ Cripple walls ~~found to be noncompliant in Table A4–C~~ braced with nonconforming structural materials shall be ~~analyzed and designed per Chapter 3~~ braced in accordance with this chapter. When a single top plate exists in the cripple wall, all end joints in the top plate shall be tied. Ties shall be connected to each end of the discontinuous top plate and shall be equal to one of the following:

1. Three–inch–by–6–inch (76 mm by 152 mm), 18–gage galvanized steel, nailed with six 8d common nails at each end.
2. One and one–fourth–inch–by–12–inch (32 mm by 305 mm), 18–gage galvanized steel, nailed with six 16d common nails at each end.
3. Two–inch–by–4–inch–by–12–inch (51 mm by 102 mm by 305 mm) wood blocking, nailed with six 16d common nails at each end.

Reason: This proposal eliminates the "initial screening" described in A403.1.1 and referred to in the first paragraph and Exception 1 of A403.1. Without this screening, Tables A4-A though A4-D can and should also be removed. The proposal also moves the Exceptions, deleting Exception 1, so that they follow the first paragraph, as discussed below.

The initial screening and the requirement to "address" Noncompliant items are not supported by the balance of the Chapter's provisions:

- The checklists (Table A4-A through A4-D) were originally intended only to assist engineers (especially engineers not familiar with principles of earthquake resistant design) in gaining an understanding of the existing structure. They were not intended as compliance criteria. As such, they are more appropriate as background or as commentary, not as provisions. (The LABC version of Chapter A4 has no screening procedure.)
- The requirement to "address" conditions identified as NC is unclear, and the balance of the Chapter does not provide adequate criteria for design or "further investigation." The optional wording (especially at the end of A403.1.1) is unenforceable. The original intent was only to encourage consideration of how the condition in question might affect earthquake performance; it was not necessarily intended that the condition should be "fixed" or made Compliant.

- The checklists go beyond the scope of the chapter: soft, weak, and open front conditions and their attendant deficiencies. They also go beyond the risk reduction objective stated in A401.1.
- The definition of Compliant in A403.1.1 is incorrect, since some of the checklist criteria differ from the requirements of the Chapter's other provisions.
- The provisions as written are impossible to implement. Use of the checklists requires analysis, but the provision says analysis must follow completion of the checklists.

The proposal moves the Exceptions because they refer to the general requirements in the first paragraph. In their present location, they are likely to be misread as exceptions to the hillside requirements in the second paragraph.

A403.1 Exception 1 is proposed for deletion because it is redundant, if not in conflict with the scope given in A401.2. The Exception exempts any building for which all the checklist statements are marked C. But Table A4-A has statements that check for soft and weak stories but not open fronts. If the building has a soft or weak story—and is therefore within the scope of Chapter A4—then it will never meet the Exception. If the building has an open front—and therefore should be within the scope of Chapter A4—the Exception risks exempting it improperly.

A403.8.1 is proposed for revision for five reasons:

- The checklist that addresses cripple walls is Table A4-B, not A4-C.
- Table A4-B provides no useful quantitative criteria to supplement the term "unbraced" in A403.8.1.
- Aside from A403.1 and A403.8.1, the Chapter makes no reference to Tables A4-A through A4-D. Without the unclear and unenforceable screening process, there is no need for these checklists and no need to preserve them for this one additional reference.
- A403.8.1 also refers to "Chapter 3" (by which it means Chapter A3), but that reference is in error, as the scopes of the two chapters are mutually exclusive. Chapter A3 is explicitly not for multi-unit residential, and its criteria should not be applied to buildings within the scope of Chapter A4.
- Indeed, since the main reason for A403.8.1 (which does not appear in the LABC version of Chapter A4) is to address the splices under Ties and Continuity, the entire first sentence of A403.8.1 could be deleted without loss of effect.

Analysis: The committee needs to make its intent clear with respect to the Section A403.1 as it relates to this change and to EB84-04/05.

Cost Impact: None

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

EB86-04/05
A403.2

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

A403.2 Scope of analysis. This chapter requires the alteration, repair, replacement or addition of structural elements and their connections to meet the strength and stiffness requirements herein. The lateral–load–path analysis shall include the resisting elements and connections from the wood diaphragm immediately above any soft, weak or open–front wall lines to the foundation soil interface or to the uppermost floor or roof ~~level~~ of a Type I structure below. ~~The top story of any building~~ Stories above the uppermost story with a soft, weak or open-front wall line need not be ~~analyzed~~ modified. The lateral–load–path analysis for added structural elements shall also include evaluation of the allowable soil–bearing and lateral pressures in accordance with UBC Section 1805.

> **Exception:** When an open–front, weak or soft wall line exists because of parking at the ground level of a two–level building, and the parking area is less than 20 percent of the ground floor level, then only the wall lines in the open, weak or soft directions of the enclosed parking area need comply with the provisions of this chapter.

Reason: The proposal clarifies the intended scope of work, which is supposed to be everything from the highest soft, weak, or open-front (SWOF) story down to the foundation. The floor diaphragm just above the SWOF story is within the scope, but all stories above that are excluded. Thus it is not necessary to specifically exclude the top story. (One story buildings are exempt from the Chapter to begin with, per A401.2.)

In the next to last sentence, "analyzed" is changed to "modified" because while no modifications to these upper stories are needed, they must still be included in the analytical model.

Cost Impact: None

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

EB87-04/05
A403.5

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Delete and substitute as follows:

~~**A403.5 Weak story limitation.** The structure shall not exceed 30 feet (9144 mm) in height or two levels if the lower level strength is less than 65 percent of the story above. Existing walls shall be strengthened as required to comply with this provision unless the weak level can resist a total lateral seismic force of W0 times the design force prescribed in Section A403.4.~~

~~The story strength for each level of all other structures shall be a minimum of 80 percent of the story above.~~

A403.5 Weak story limitation. Every weak story shall be strengthened to the lesser of:

1. O_o times the story shear prescribed by Sections A403.3 and A403.4.
2. In two-story buildings up to 30 feet (9000 mm) in height, 65 percent of the strength of the story above. In all other buildings, 80 percent of the strength of the story above.

Reason: This is a proposal for clarification only. There is no substantive change. The existing text, borrowed from the UBC, made more sense in that context but does not read clearly here. The alternative is clearer.

Also, the reference to A403.4 in the existing provision is incorrect. It should be to A403.3 or to both A403.3 and A403.4.

Cost Impact: None

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

EB88-04/05

A403.6, A406.2

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

A403.6 Story drift limitation. The calculated story drift for each retrofitted level shall not exceed the allowable deformation compatible with all vertical–load–resisting elements and 0.025 times the story height. The calculated story drift shall not be reduced by the effects of horizontal diaphragm stiffness but shall be increased when these effects produce rotation. Drift calculations shall be in accordance with UBC Section 1630.9 and 1630.10.

The effects of rotation and soil stiffness shall be included in the calculated story drift when lateral loads are resisted by vertical elements whose required depth of embedment is determined by pole formulas, such as Formulas (6–1) and (6–2) in UBC Section 1806.8.2. The ~~range of this~~ coefficient of subgrade reaction used in the deflection calculations shall be provided from an approved geotechnical engineering report or from other approved methods.

A406.2 Allowable foundation and lateral pressures. Allowable foundation and lateral pressures shall be permitted to use the values from UBC Table 18–I–A. ~~The coefficient of variation of subgrade reaction shall be established by an approved geotechnical engineering report or other approved methods when used in the deflection calculations of embedded vertical elements as required in Section A403.6.~~ For soil that supports embedded vertical elements, Section A403.6 shall apply.

Reason: The proposal clarifies provisions regarding allowable soil pressures for pole-type column elements. In A403.6, the proposed change is a correction to standard technical terminology. The proposed changes to A406.2 eliminate duplication.

Cost Impact: None

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

EB89-04/05

A401.2, A402, A403.1, A403.2, A403.3, A403.4, A403.6, A403.7, A403.8, A403.11.2.1, A403.11.2.2, A406.1, A406.2, A406.3, A406.3.2.1, A408.1

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

A401.2 Scope. The provisions of this chapter shall apply to all existing wood–frame buildings, or portions thereof, that are used as hotels, lodging houses, congregate residences or apartment houses where:

1. The ground floor portion of the wood–frame structure contains parking or other similar open floor space that causes soft, weak or open–front wall lines as defined in this chapter, and there exists one or more levels 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 levels above.

This chapter is applicable ~~to Seismic Hazard Zones~~ where S_{D1} as defined in the Building Code is 0.3g or higher~~, or in Seismic Zones 3 and 4 of the UBC~~.

SECTION A402
DEFINITIONS

Notwithstanding the applicable definitions, symbols and notations in the Building Code, the following definitions shall apply for the purposes of this chapter:

CONGREGATE RESIDENCE. A congregate residence is any building or portion thereof for occupancy by other than a family that contains facilities for living, sleeping and sanitation as required by ~~this code~~ the Building Code, and that may include facilities for eating and cooking. A congregate residence may be a shelter, convent, monastery, dormitory, fraternity or sorority house, but does not include jails, hospitals, nursing homes, hotels or lodging houses.

DWELLING UNIT. Any building or portion thereof for not more than one family that contains living facilities, including provisions for sleeping, eating, cooking and sanitation as required by ~~this code~~ the Building Code, or congregate residence for 10 or fewer persons.

A403.1 General. Buildings within the scope of this chapter shall be analyzed, designed and constructed in conformance with the ~~1997 Uniform Building Code™~~ Building Code except as modified in this chapter. Prior to any analysis, an initial screening review of the buildings shall be performed as noted in Section A403.1.1. All items found to be noncompliant shall be addressed in this analysis.

(Remainder of section is unchanged)

A403.2 Scope of analysis. This chapter requires the alteration, repair, replacement or addition of structural elements and their connections to meet the strength and stiffness requirements herein. The lateral–load–path analysis shall include the resisting elements and connections from the wood diaphragm above any soft, weak or open–front wall lines to the foundation soil interface or the upper level of a Type I structure below. The top story of any building need not be analyzed. The lateral–load–path analysis for added structural elements shall also include evaluation of the allowable soil–bearing and lateral pressures in accordance with ~~UBC Section 1805~~ the Building Code .

Exception: (No change to current text)

A403.3 Design base shear. The design base shear in a given direction shall be 75 percent of the value ~~determined by Formulas (30–4) through (30–7) in UBC Section 1630.2~~ required for similar new construction in accordance with the Building Code.

A403.4 Vertical distribution of forces. The total seismic force shall be distributed over the height of the structure ~~based on Formula (30–15) in UBC Section 1630.5~~ as for new construction in accordance with the Building Code. Distribution of force by story weight shall be permitted for two–story buildings. The value of R used in the design of any story shall be less than or equal to the value of R used in the given direction for the story above.

A403.6 Story drift limitation. The calculated story drift for each retrofitted level shall not exceed the allowable deformation compatible with all vertical–load–resisting elements and 0.025 times the story height. The calculated story drift shall not be reduced by the effects of horizontal diaphragm stiffness but shall be increased when these effects produce rotation. Drift calculations shall be in accordance with ~~UBC Section 1630.9 and 1630.10~~ the Building Code.

The effects of rotation and soil stiffness shall be included in the calculated story drift when lateral loads are resisted by vertical elements whose required depth of embedment is determined by pole formulas~~, such as Formulas (6–1) and (6–2) in UBC Section 1806.8.2~~. The range of this coefficient of subgrade reaction used in the deflection calculations shall be provided from an approved geotechnical engineering report or other approved methods.

A403.7 P ? effects. The requirements of ~~UBC Sections 1630.13 and 1633.2.4~~ the Building Code shall apply except as modified herein. All structural framing elements and their connections not required by design to be part of the lateral–force–resisting system shall be designed and/or detailed to be adequate to maintain support of design dead plus live loads when subjected to the expected deformations caused by seismic forces. The stress analysis of cantilever columns shall use a buckling factor of 2.1 for the direction normal to the axis of the beam.

A403.8 Ties and continuity. All parts of the structure included in the scope of Section A403.2 shall be interconnected~~, and the connection shall be capable of resisting the seismic force created by the parts being connected. Any smaller portion of a building shall be tied to the remainder of the building with elements having a strength to resist 0.5 Cal times the weight of the smaller portion. A positive connection for resisting a horizontal force acting parallel to the member shall be provided for each beam, girder or truss included in the lateral load path. This force shall not be less than 0.5 Cal times the dead plus live load~~ as required by the Building Code.

A403.11.2.1 Drift limit. Wood structural panel shear walls shall meet the story drift limitation of Section A403.6. Conformance to the story drift limitation shall be determined by approved testing or calculation, or analogies drawn therefrom, and not by the use of an aspect ratio. Calculated deflection shall be determined according to ~~UBC Standard 23–2, Section 23.223, "Calculation of Shear Wall Deflection~~ APA Form No. L350G," and 25 percent shall be added to account for inelastic action and repetitive loading. Contribution to the shear wall deflection from the anchor or tie–down slippage shall also be included. The slippage

contribution shall include the vertical elongation of the connector metal components, the vertical slippage of the connectors to framing members, localized crushing of wood due to bearing loads, and shrinkage of the wood elements because of changes in moisture content as a result of aging. The total vertical slippage shall be multiplied by the shear panel aspect ratio and added to the total horizontal deflection. Individual shear panels shall be permitted to exceed the maximum aspect ratio, provided the story drift and allowable shear capacities are not exceeded.

A403.11.2.2 Openings. Shear walls are permitted to be designed for continuity around openings in accordance with ~~Section 2315.1 of the UBC~~ the Building Code. Blocking and steel strapping shall be provided at corners of the openings to transfer forces from discontinuous boundary elements into adjoining panel elements. Alternatively, ~~the~~ perforated shear wall provisions of the ~~IBC~~ Building Code ~~may~~ are permitted to be used.

A406.1 New materials. All materials approved by ~~this code~~ the Building Code, including their appropriate allowable stresses and minimum aspect ratios, shall be permitted to meet the requirements of this chapter.

A406.2 Allowable foundation and lateral pressures. ~~Allowable foundation and lateral pressures shall be permitted to use the~~ The use of default values from ~~UBC Table 18-I-A~~ the Building Code for continuous and isolated concrete spread footings shall be permitted. The coefficient of variation of subgrade reaction shall be established by an approved geotechnical engineering report or other approved methods when used in the deflection calculations of embedded vertical elements as required in Section A403.6.

A406.3 Existing materials. All existing materials shall be in sound condition and constructed in conformance to ~~this code~~ the Building Code before they can be used to resist the lateral loads prescribed in this chapter. The verification of existing material conditions and their conformance to these requirements shall be made by physical observation reports, material testing or record drawings as determined by the structural designer and as approved by the building official.

A406.3.2.1 Allowable nail slip values. When the required drift calculations of Section A403.11.2.1 rely on the lower slip values for common nails or surfaced dry lumber, their use in construction shall be verified by exposure. The use of box nails and unseasoned lumber may be assumed without exposure. The design value of the box nails shall be assumed to be similar to that of common nails having the same diameter. Verification of surfaced dry lumber shall be by identification conforming to ~~UBC Section 2340.1~~ the Building Code.

A408.1 Structural observation. All structures regulated by this chapter require structural observation. The owner shall employ the engineer or architect responsible for the structural design, or another engineer or architect designated by the engineer or architect responsible for the structural design, to perform structural observation as defined in the ~~UBC~~ Building Code.

Reason: References to "this code," "current code," and specific UBC sections should be replaced by "the Building Code" in order to allow the chapter to be used in jurisdictions where the UBC is not the model code. Specific code sections from a given model code (UBC, IBC, ASCE 7, etc.) can be identified in commentary and/or inserted as local amendments.

In A401.2, the entire sentence may be deleted for two reasons: 1. The question of applicability is already covered elsewhere in the IEBC. 2. The provisions of this Chapter may be used in other seismic zones and seismic design categories; if left unchanged it could be read as an exemption for lower seismic areas.

Regarding A403.8: The term Ca is in the UBC but not the IBC or ASCE 7. The IBC/ASCE term corresponding to Ca is SDS/2.5. The corresponding "ties and continuity" provision is in ASCE 7-02 section 9.5.2.6.1.1. To avoid confusion, the proposal is to refer directly to the Building Code. If the original language is to be retained, revisions will be needed to accommodate building codes based on the IBC or ASCE 7. Also, note that the corresponding provision in UBC section 1633.2.5 changed the "0.5" in the last sentence of A403.8 to "0.3."

Analysis: The committee needs to make its intent clear with respect to the last paragraph of Section A401.2 as it relates to this change and to EB82-04/05. Further, Section A403.11.2.1 references APA Form No. L350G. APA Form No. L350G has not been submitted. Therefore, staff can not determine if the standard meets the minimum requirements for referenced standards as contained in Section 3.6 of the ICC *Code Development Process for the International Codes*. Staff will review it and post the results at the ICC website prior to the code change hearings.

Cost Impact: None

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

EB90-04/05
A403.10

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

A403.10 Horizontal diaphragms. The ~~analysis of shear demand or capacity~~ strength of an existing ~~plywood or diagonally sheathed~~ horizontal diaphragm sheathed with wood structural panels or diagonal sheathing need not be investigated unless the diaphragm is required to transfer lateral forces from ~~the lateral-resisting elements~~ vertical elements of the seismic force-resisting system above the diaphragm to ~~other lateral-resisting~~ elements below the

diaphragm because of an offset in placement of the elements.

Wood diaphragms in structures that support floors or roofs above shall not be allowed to transmit lateral forces by rotation or cantilever except as allowed by the Building Code. However, rotational effects shall be accounted for when unsymmetric wall stiffness increases shear demands.

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

Reason: The proposal clarifies and corrects the provision consistent with typical code language used elsewhere in Chapter A4. It represents no substantive change.

Cost Impact: None

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

EB91-04/05

A403.11, A403.11.1, A403.11.2.1, 403.11.4.3

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

A403.11 Wood shear walls. Wood shear walls shall have ~~sufficient~~ strength and stiffness sufficient to resist the ~~tributary~~ seismic loads and shall conform to the ~~special~~ requirements of this section.

A403.11.1 Gypsum or cement plaster products. Gypsum or cement plaster products shall not be used to provide lateral resistance in ~~the~~ a soft or weak story or in a story with an open-front wall line, whether or not new elements are added to mitigate the soft, weak or open-front condition.

A403.11.2.1 Drift limit. Wood structural panel shear walls shall meet the story drift limitation of Section A403.6. Conformance to the story drift limitation shall be determined by approved testing or calculation, ~~or analogies drawn therefrom, and~~ not by the use of an aspect ratio. Calculated deflection shall be determined according to UBC Standard 23–2, Section 23.223, "Calculation of Shear Wall Deflection," and shall be increased by 25 percent ~~shall be added to account for inelastic action and repetitive loading~~. Contribution to the shear wall deflection from the anchor or tie–down slippage shall also be included. The slippage contribution shall include the vertical elongation of the connector metal components, the vertical slippage of the connectors to framing members, localized crushing of wood due to bearing loads, and shrinkage of the wood elements because of changes in moisture content as a result of aging. The total vertical slippage shall be multiplied by the shear panel aspect ratio and added to the total horizontal deflection. Individual shear panels shall be permitted to exceed the maximum aspect ratio, provided the allowable story drift and allowable shear capacities are not exceeded.

A403.11.4.3 Required preload of bolted hold–down connectors. Bolted hold–down connectors shall be preloaded to reduce slippage of the connector. Preloading shall consist of tightening the nut on the tension anchor after the placement but before the tightening of the shear bolts in the panel boundary flange member. The tension anchor shall be tightened until the shear bolts are in firm contact with the edge of the hole nearest the direction of the tension anchor. Hold–down connectors with self–jigging bolt standoffs shall be installed in a manner to permit preloading.

Reason: The proposal clarifies and corrects the provisions consistent with typical code language used elsewhere in Chapter A4.

In A403.11, the word "wood" is added to remove the impression that only wood walls may be used. While wood walls are frequently used for this kind of work, masonry, concrete, or other wall materials may be used in accordance with the Building Code (per A403.1). This provision applies only to new wood walls. If other materials are used, they are subject to design provisions elsewhere in the code.

The final clause proposed for A403.11.1 responds to the possibility that the provisions of Chapter A4 can generally be avoided if the SWOF condition is simply corrected. This additional clause clarifies that even if that alternative approach is taken, stucco is not a qualified material.

In A403.11.2.1, the proposal removes unenforceable commentary language in two places.

Cost Impact: None

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

EB92-04/05

A404

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

SECTION A404
~~GENERAL REQUIREMENTS FOR~~
PHASED CONSTRUCTION

~~When the building contains three or more levels,~~ The work specified in this chapter shall be permitted to be done in the following phases. Work shall start with Phase 1 ~~I~~ unless otherwise approved by the building official. When the building does not contain the conditions associated with the given ~~shown in any~~ phase, the ~~sequence of retrofit~~ work shall proceed to the next phase ~~in numerical order~~.

Phase 1 Work. The first phase ~~of the retrofit work shall include the ground floor portion of the wood structure that contains parking or other similar open floor space~~ shall include all work in the lowest story with a soft, weak or open-front wall line and all foundation work.

Phase 2 Work. The second phase ~~of the retrofit work~~ shall include wood-framed walls ~~of any level of wood construction~~ in any story with two or more ~~levels~~ stories above that are laterally braced with nonconforming structural materials.

Phase 3 Work. The third and final phase ~~of the retrofit work~~ shall include ~~the remaining portions of the building up to, but not including, the top story as specified in Section A403.2~~ all required work not performed in Phase 1 or Phase 2.

Reason: The proposal clarifies and corrects the provision consistent with typical code language used elsewhere in Chapter A4. It removes references to parking areas that might not exist, and it adds foundation work to Phase 1. It represents no substantive change.

Cost Impact: None

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

EB93-04/05

A406.1, A406.3, A406.3.1, A406.3.2.1, A406.3.5

Proponent: David Bonowitz, S.E., San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

A406.1 New materials. All materials approved by this code, including their appropriate allowable stresses and ~~minimum~~ limiting aspect ratios, shall be permitted to meet the requirements of this chapter.

A406.3 Existing materials. All existing materials shall be in sound condition and constructed in general conformance to this code before they ~~can~~ are permitted to be used to resist the lateral loads prescribed in this chapter. The verification of existing material conditions and their conformance to these requirements shall be made by physical observation reports, material testing or record drawings as determined by the structural designer and as approved by the building official.

A406.3.1 Horizontal wood diaphragms. Allowable shear values for existing horizontal wood diaphragms that require analysis under Section A403.10 ~~shall be~~ are permitted to ~~use~~ be taken from Table A4–E ~~for their allowable values~~. The values in Table A4-E are intended for allowable stress design. Design forces based on strength design shall be reduced to allowable stress levels before comparison with the limiting values in the table.

A406.3.2.1 Allowable nail slip values. The use of box nails and unseasoned lumber are permitted to be assumed. When the required drift calculations of Section A403.11.2.1 rely on the ~~lower~~ slip values for common nails or surfaced dry lumber, their use in construction shall be verified by exposure. ~~The use of box nails and unseasoned lumber may be assumed without exposure.~~ The design value of the box nails shall be assumed to be similar to that of common nails having the same diameter. Verification of surfaced dry lumber shall be by identification conforming to UBC Section 2340.1.

A406.3.5 Strength of concrete. All existing concrete footings shall be permitted to ~~use the allowable stresses for~~ be assumed to be plain concrete with a compressive strength of 2,000 pounds per square inch (13.8 MPa). ~~The strength of~~ Existing concrete ~~with a recorded~~ compressive strength taken greater than 2,000 pounds per square inch (13.8 MPa) shall be verified by testing, record drawings or department records.

Reason: The proposal makes revisions to improve clarity and enforceability. In A406.1, the critical aspect ratios are maxima, not minima, and the term “limiting” is suggested to avoid confusion. The addition to A406.3.1 is self explanatory, though necessary to avoid confusion and misuse of Table A4-E because the loads specified in Section A403.3 are at strength level.

Cost Impact: None

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

EB94-04/05

A407.1, A407.3.1, A407.3.2, A407.3.4

Proponent: David Bonowitz, San Francisco, CA, representing NCSEA Existing Buildings Committee and SEAOC Existing Buildings Committee

Revise as follows:

SECTION A407
~~REQUIRED~~ INFORMATION REQUIRED TO BE ON THE PLANS

A407.1 General. The plans shall show all information necessary ~~dimensions and materials~~ for plan review and for construction and shall accurately reflect the results of the engineering investigation and design. ~~Details specific to the actual condition found shall be shown on the drawings to assure installation of all elements required for construction of the necessary complete load path.~~ The plans shall contain a note that states that this retrofit was designed in compliance with the criteria of this chapter.

A407.3.1 Foundation plan elements. The foundation plan shall include the size, type, location and spacing of all anchor bolts with the required depth of embedment, edge and end distance; the location and size of all shear walls and all columns for braced frames or moment frames; referenced details for the connection of shear walls, braced frames or moment–resisting frames to their footing; and referenced sections for any grade beams and footings.

A407.3.2 Framing plan elements. The framing plan shall include the ~~width~~ length, location and material of shear walls; the ~~width,~~ location and material of frames; references on details for the column–to–beam connectors, beam–to–wall connections, and shear transfers at floor and roof diaphragms; and the required nailing and length for wall top plate splices.

A407.3.4 General notes. General notes shall show the requirements for material testing, special inspection, and structural observation ~~and the proper installation of newly added materials~~.

Reason: The proposal makes revisions to improve clarity and enforceability. In A407.1, the proposal deletes the second sentence because it goes unnecessarily and unintentionally beyond standard practice will be difficult to implement and enforce. The revision to the first sentence will cover what is intended by the second sentence. In A407.3.4, the proposal deletes the final portion because "proper installation" is a matter of means and methods for the contractor.

A407.3.1 currently contemplates new braced frames and moment frames as retrofit elements. However, shear walls can also be used as retrofit elements (for example, see A407.5), and their location and connection to the foundation are just as important as those of new frame columns. Omission of shear walls in A407.3.1 appears to have been a simple oversight, as shear walls are already explicitly noted in A407.3.2.

Cost Impact: None

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

EB95-04/05
A502

Proponent: Michael Valley, Magnusson Klemencic Associates, Seattle, WA, representing NCSEA/Structural Engineers Association of Washington

Revise as follows:

SECTION A502
SCOPE

The provisions of this chapter shall apply to all buildings having concrete floors ~~and/~~or concrete roofs supported by reinforced concrete walls or by concrete frames and columns, ~~and/~~or to buildings having concrete frames with masonry infill. This chapter shall not apply to buildings with roof diaphragms that are defined as flexible diaphragms by the Building Code.

Buildings that were designed and constructed in accordance with the seismic provisions of the 1993 *BOCA National Building Code*, the 1994 *Standard Building Code,* the 1976 *Uniform Building Code,* the 2000 *International Building Code,* or later editions of these codes, shall be deemed to comply with these provisions, unless the seismicity of the region has increased since the design of the building.

~~Exception:~~ ~~This chapter shall not apply to:~~

1. ~~Buildings designed in accordance with the seismic provisions of the 1993 BOCA National Building Code, the 1994 Standard Building Code, or the 1976 Uniform Building Code, or later editions of these codes, unless the seismicity of the region has changed since the design of the building.~~
2. ~~Concrete buildings that have a flexible diaphragm at the roof level.~~
3. ~~Concrete buildings and concrete with masonry infill buildings in Seismic Zones 0 and 1, or where Seismic Design Category A is permitted.~~

Reason: Editorial: changes are required to clarify differences between buildings in this chapter for which this chapter does not apply (flexible diaphragms) and buildings that are considered to comply with this chapter without additional review ("benchmark buildings"). Also, "changed" has been replaced by "increased" for the seismic hazard, since the benchmark building requirement would be met if the seismic hazard has decreased.

In addition, this chapter need not exempt buildings assigned to Seismic Design Category A as these building are already exempt from most seismic requirements per the building code (IBC Sec 1614).

Cost Impact: None

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

EB96-04/05
A505.2.3

Proponent: David Pomerleau, Ficcadenti & Waggoner, Irvine, CA, representing NCSEA, SEAOC, SEAOSC

Revise as follows:

A505.2.3 Partially grouted masonry. A minimum of five units shall be removed from the walls and tested in conformance with ~~UBC Standard 21–4~~ ASTM C 90. Compressive strength of the masonry ~~may~~ is permitted to be determined in accordance with ~~UBC Table 21–D~~ IBC Tables 2105.2.2.1.1 and 2105.2.2.1.2, assuming Type S mortar The strain associated with peak stress may be taken as 0.0025.

Reason: Editorial update of outdated material. Eliminates references to a model code that is no longer current.

Analysis: If this proposal is approved the name and edition of the referenced standard are ASTM C90-2003 "Standard Specification for Loadbearing Concrete Masonry Units"

Cost Impact: None

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

EB97-04/05
A506.1, A507

Proponent: Michael Valley, Magnusson Klemencic Associates, Seattle, WA, representing Structural Engineers Association of Washington

1. Revise as follows:

A506.1 Site ground motion for Tier 1 analysis. The earthquake loading used for determination of demand on elements ~~and~~ of the structure shall correspond to that required by ~~the Building Code~~ ASCE 31.

A507.1 General. Structures conforming to the requirements of ~~this section may~~ the ASCE 31 Tier 1, Screening Phase are permitted to be shown to be in conformance with this chapter by submission of a report to the building official as described in this section.

2. Delete without substitution:

~~**A507.2 Limits.** This section shall apply only to buildings for which a visual inspection can verify that their configuration is essentially regular in mass and geometry.~~

~~**Exception:** Buildings containing some plan or vertical irregularity may be evaluated by this section, provided rational structural calculations are performed to show that the following irregularities do not exceed the limits for a regular building classification as defined by the Building Code:~~

~~1. Weak story.~~
~~2. Soft story.~~
~~3. Geometry.~~
~~4. Vertical discontinuity.~~
~~5. Mass.~~
~~6. Torsion.~~

3. Revise as follows:

~~**A507.3**~~ **A507.2 Evaluation report.** The ~~engineer or architect of record~~ registered design professional shall prepare a report summarizing the analysis conducted in ~~conformance~~ compliance with this section. As a minimum, the report shall include the following items:

1. Building description.
2. Site inspection summary.
3. Summary of reviewed record documents.
4. Earthquake design data used for the evaluation of the building.
5. Completed checklists.
6. Quick–check analysis calculations.
7. Summary of deficiencies.

4. Delete without substitution:

~~**A507.4 Evaluation procedure.** Prior to completing the required checklists, the following items shall be performed by the architect or engineer of record conducting the evaluation:~~

~~1. A site inspection shall be conducted, and any deficiencies and/or existing damage discovered shall be documented in the evaluation report per Section A507.3.~~
~~2. All available records regarding the construction, improvements and rehabilitation of the building shall be secured and reviewed.~~
~~3. Material characteristics of the building shall be determined in accordance with Section A505.2.~~
~~4. The necessary earthquake design data must be established for use in the evaluation in accordance with Section A506.1 and the Building Code.~~

~~Based on the above information, the appropriate checklist(s) shall be completed in accordance with Section A507.5. Upon completing the checklist(s), all noncompliant statements shall be summarized and included in the evaluation report.~~

All noncompliant items shall be mitigated by rehabilitating the structure, or shall be shown to be compliant by performing a Tier 2 or Tier 3 analysis.

A507.5 Evaluation checklists. Checklist selection shall be based on the Seismic Zone and occupancy or Seismic Design Category of the particular building(s) as follows:

1. Any occupancy in Seismic Zones 2A and 2B or Seismic Design Categories B and C: Basic Structural Checklist.
2. Any occupancy in Seismic Zones 3 and 4 or Seismic Design Categories D and E: Basic Structural Checklist and Supplemental Structural Checklist.

The Foundation Checklist shall be completed for all buildings.

Each evaluation statement of each required checklist shall be given one of the following marks: Compliant (C), Noncompliant (NC), or Not Applicable (N/A).

Statements that cannot be answered adequately because of a lack of information or that require further investigation beyond what is available at the time of the evaluation shall be deemed noncompliant (NC).

For buildings with a distinct lateral–force–resisting system in each principal direction, or with more than one type of lateral–force–resisting system in the same principal direction, a separate checklist evaluation shall be completed for each direction and/or system.

A507.6 Quick–check analysis procedure. Analysis under Section A507 shall be limited to quick–checks when required by the evaluation statements or the building official.

Exception: Certain statements may require additional analysis not directly addressed under this section. In such conditions, the design professional shall use rational analytical methods in addressing the statement.

Buildings shall be analyzed to resist the minimum lateral forces assumed to act nonconcurrently in the direction of each principal axis of the structure in accordance with the Building Code.

Calculation of the design force level shall be in accordance with Section A506.1.

For buildings more than one story in height, the total force shall be distributed in accordance with the requirements of the Building Code.

Horizontal distribution of shear and torsional moments shall be in accordance with the Building Code. The 5–percent accidental torsion factor, the torsional amplification factor and the redundancy factor need not be considered.

A507.6.1 Shear stress in frame columns. The average shear stress, Vavg, in the columns of concrete frames shall be computed in accordance with Equation (A5–1).

Equation A5-1

Where:

Ac = Summation of the cross–sectional area of all columns in the story under consideration.

nc = Total number of columns of the frames, in the direction of loading.

nf = Total number of frames in the direction of loading.

Vj = Story shear computed in accordance with Section A507.6.

Equation (A5–1) assumes that all of the columns in the frame have similar stiffness. When the above assumption leads to an unconservative condition, the load shall be distributed in accordance with the columns' relative rigidities.

A507.6.2 Shear stress in shear walls. The average shear stress in shear walls, Vavg, shall be calculated in accordance with Equation (A5–2).

$V_{avg} = V_j / A_w$ (Equation A5–2)

Where:

Aw = Summation of the horizontal cross–sectional area of all shear walls in the direction of loading. Openings shall be taken into consideration when computing Aw. For masonry walls, the net area shall be used.

Vj = Story shear at level j computed in accordance with Section A507.6.

A507.6.3 Axial stress because of overturning. The axial stress of columns subjected to overturning forces, Pot, shall be calculated in accordance with Equation (A5–3).

(Equation A5–3)

Where:

hn = Height (in feet) above the base to the roof level.

L = Total length of the frame (in feet).

nf = Total number of frames in the direction of loading.

V = Lateral force.

Reason: The Tier 1 procedure in this appendix appears to have been adapted from FEMA 310. ASCE 31-03 (which replaced FEMA 310) is more comprehensive and current than what is contained in Section 507. Since the ASCE 31 standard is a referenced document in the IEBC,

there is no reason to provide a redundant, but less comprehensive, version of that procedure in the appendix of the IEBC. This is consistent with the current approach in the IBC, which is to use standards by reference rather than copy text into the building code.

In addition, this proposal changes to "registered design professional" consistent with IBC Section 202 and clarifies some language.

Cost Impact: None

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

EB98-04/05
A508.3

Proponent: Michael Valley, Magnusson Klemencic Associates, Seattle, WA, representing Structural Engineers Association of Washington

Revise as follows:

A508.3 Analysis procedure. A structural analysis shall be ~~made~~ performed for all structures in accordance with the requirements of the Building Code, except as modified in Section A506. The response modification factor, R, shall be selected based on the type of seismic–force–resisting system employed and shall comply with the requirements of Section 407.1.1.2.

Reason: This reinforces the limitation of R-factors to those for "ordinary" systems unless the structural system can be shown to comply with other detailing classifications. Also, it clarifies language in first sentence.

Cost Impact: None

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

EB99-04/05
A508.4

Proponent: Michael Valley, Magnusson Klemencic Associates, Seattle, WA, representing Structural Engineers Association of Washington

Revise as follows:

A508.4 Design, detailing requirements and structural component load effects. The design and detailing of ~~the~~ new components of the seismic–force–resisting system shall comply with the requirements ~~of Section 1620~~ of the *International Building Code*, unless specifically modified herein.

Reason: There is no way to change the detailing of existing elements. Eliminate references to specific sections of the building code.

Cost Impact: None

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

EB100-04/05
A508.5.1

Proponent: David Pomerleau, Ficcadenti & Waggoner, Irvine, CA, representing NCSEA, SEAOC, SEAOSC

Revise as follows:

A508.5.1 Load combinations. For Load and Resistance Factor Design (Strength Design), structures and all portions thereof shall resist the most critical effects from the combinations of factored loads prescribed in the Building Code.

> **Exception:** For concrete beams and columns the shear effect shall be determined based on the most critical load combinations prescribed in the Building Code. The shear load effect because of seismic forces shall be multiplied by a factor of *Cd*~~, or 0.7 R for use with the UBC~~, but combined shear load effect needs not be greater than *Ve*, as calculated in accordance with Equation (A5–4). M_{pr1} and M_{pr2} are the end moments, assumed to be in the same direction (clock–wise or counter clock–wise), based on steel tensile stress being equal to 1.25 f_y where f_y is the specified yield strength.

(No change to Equation A5-4)

Reason: Editorial update of outdated material. Eliminates reference to a model code that is no longer current.

Cost Impact: None

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

EB101-04/05
A509.2, A509.3, A509.4

Proponent: Fred Turner, California State Seismic Commission, Sacramento, CA, representing himself

Delete and substitute as follows:

~~**A509.2 Pseudo–nonlinear dynamic analysis procedure.** Structures shall be analyzed for seismic forces acting concurrently on the orthogonal axes of the structure. The effects of the loading on two orthogonal axes shall be combined by SRSS methods. The analysis shall include all torsional effects. Accidental torsional effects need not be considered.~~

~~**A509.2.1 Determination of the effective stiffness.**~~

~~**A509.2.1.1 General.** The effective stiffness of concrete and masonry elements or systems shall be calculated as the secant stiffness of the element or system with due consideration of the effects of tensile cracking and compression strain. The secant stiffness shall be taken from the force–displacement relationship of the element or system. The secant stiffness shall be measured as the slope from the origin to the intersection of the force–displacement relationship at the assumed displacement. The force– displacement relationship shall be determined by a nonlinear analysis. The force–displacement analysis shall include the calculation of the displacement at which strength degradation begins.~~

> ~~**Exception:** The initial effective moment of inertia of beams and columns in shear wall or infilled frame buildings may be estimated using Table A508.1. The ratio of effective moment of inertia used for the beams and for the columns shall be verified by Equations (A5–5), (A5–6) and (A5–7). The estimates shall be revised if the ratio used exceeds the ratio calculated by more than 20 percent.~~

~~(Equation A5–5)~~

~~Where:~~

~~(Equation A5–6)~~

~~and~~

~~(Equation A5–7)~~

~~**A509.2.1.2 Effective stiffness of infills.** The effective stiffness of an infill shall be determined from a nonlinear analysis of the infill and the confining frame. The effect of the infill on the stiffness of the system shall be determined by differentiating the force–displacement relationship of the frame–infill system from the frame–only system.~~

~~**A509.2.1.3 Model of infill.** The mathematical model of an infilled frame structure shall include the stiffness effects of the infill as a pair of diagonals in the bays of the frame. The diagonals shall be considered as having concrete properties and only axial loads. Their lines of action shall intersect the beam–column joints. The secant stiffness of the force–displacement relationship, calculated as prescribed in Section A509.2.1.2, shall be used to determine the effective area of the diagonals. The effective stiffness of the frame shall be determined as specified in Section A509.2.1.1. Other procedures that provide the same effective stiffness for the combination of infill and frame may be used when approved by the building official.~~

~~**A509.2.2 Description of analysis procedures.** The pseudo-nonlinear dynamic analysis is an iterative response spectrum analysis procedure using effective stiffness as the stiffness of the structural components. The response spectrum analysis shall use the peak dynamic response of all modes having a significant contribution to total structural response. Peak modal responses are calculated using the ordinates of the appropriate response spectrum curve that corresponds to the modal periods. Maximum modal contributions are combined in a statistical manner to obtain an approximate total structural response.~~

~~The effective stiffnesses shall be determined by an iterative method. The mathematical model using assumed effective stiffnesses shall be used to calculate dynamic displacements. The effective stiffness of all concrete and masonry elements shall be modified to represent the secant stiffness obtained from the nonlinear force–displacement analysis of the element or system at the calculated displacement. A re–analysis of the mathematical model shall be made using the adjusted effective stiffness of existing and supplemental elements and systems until closure of the iterative process is obtained. A difference of 10 percent from the effective stiffness used and that recalculated may be assumed to constitute closure of the iterative process.~~

~~**A509.2.2.1 Number of modes.** At least 90 percent of the participating mass of the structure is included in the calculation of response for each principal horizontal direction.~~

~~**A509.2.2.2 Combining modes.** The peak displacements for each mode shall be combined by recognized methods. Modal interaction effects of three–dimensional models shall be considered when combining modal maxima.~~

~~**A509.3 Capacity spectrum analysis procedure.**~~

~~**A509.3.1 General.** This section presents an alternative procedure for a nonlinear static analysis for verification of acceptable performance by comparing the available capacity to the earthquake demand.~~

~~Where inelastic torsional response is a dominant feature of overall response, the engineer shall use either a retrofit that~~

reduces the torsional response or an alternative analysis procedure. Inelastic torsional response may be deemed to exist if torsional irregularity as defined in Section A508.2 is present in any story.

The behavior of foundation components and the effects of soil–structure interaction shall be modeled or shown to be insignificant to building response.

A509.3.2 Modeling of building components.

A509.3.2.1 Component initial stiffness. Component initial stiffness shall be represented by a secant value defined by the effective yield point of the component. The effective initial stiffness shall be calculated using principles of mechanics, with due consideration of the effects of tensile cracking and compression strain.

Exception: Component effective initial stiffness may be calculated using the approximate values shown in Table A508.1.

A509.3.2.2 Component strength. The strength of building components shall be calculated using the procedures outlined in the appropriate section of the Building Code.

Exception: Component properties may be calculated using the principles of mechanics as verified by experimental results.

A509.3.2.3 Component deformability. The deformability of building components shall be obtained from nonlinear load–deformation relationships that are appropriate for the component being considered. The nonlinear load–deformation relationship shall include information on the plastic deformation capacity at which lateral strength degrades, the plastic deformation capacity at which gravity–load resistance degrades, and the residual strength of the component after strength degradation.
The nonlinear load–deformation relationships of building components shall be determined from nonlinear analyses based on the principles of mechanics, experimental data or established values published in technical literature, as approved by the building official

A509.3.3 Description of analysis procedures.

A509.3.3.1 Determination of the capacity curve. The structure's capacity shall be represented by a capacity curve, which is a plot of the building's base shear versus roof displacement. The capacity curve shall be determined by performing a series of sequential analyses with increasing lateral load, using a mathematical model that accounts for reduced resistance of yielding components. The analysis should include the effect of gravity loads on the building's response to lateral loads.

Lateral forces shall be applied to the structure in proportion to the product of mass and fundamental mode shape.

Exceptions:

1. For buildings with weak stories, the vertical distribution of lateral forces shall be modified to reflect the changed fundamental mode shape after yielding of the weak story.
2. For buildings over 100 feet (30 480 mm) in height or buildings with irregularities that cause significant participation from modes of vibration other than the fundamental mode, the vertical distribution of lateral forces shall reflect the contribution of higher modes.

A509.3.3.2 Conversion of the capacity curve to the capacity spectrum. The capacity curve calculated in Section A509.3.3.1 shall be converted to the capacity spectrum, which is a representation of the capacity curve in the Acceleration–Displacement Response Spectra (ADRS) format. Each point on the capacity curve shall be converted using Equations (A5–8) and (A5–9).

(Equation A5–8)
(Equation A5–9)

Where:

(Equation A5–10)
(Equation A5–11)

A509.3.3.3 Bilinear representation of the capacity spectrum. A bilinear representation of the capacity spectrum curve obtained in Section A509.3.3.2 shall be used in estimating the appropriate reduction of spectral demand. The first segment of the bilinear representation of the capacity spectrum shall be a line from the origin at the initial stiffness of the building using the component initial stiffness specified in Table A508.1. The second segment of the bilinear representation of the capacity spectrum shall be a line back from the trial performance point, api, dpi, at a slope that results in the area under the bilinear representation being approximately equal to the area under the actual capacity spectrum curve. The intersection of the two segments of the bilinear representation of the capacity spectrum shall determine the yield point ay, dy.

A509.3.3.4 Development of the demand spectrum. The demand spectrum is a plot of the spectral acceleration and spectral displacement of the demand earthquake ground motion in the Acceleration–Displacement Response Spectra (ADRS) format. The 5-percent damped acceleration response spectra in Section A506 shall be modified for use in the capacity spectrum analysis procedure as follows:

1. In the constant acceleration region, the 5-percent damped acceleration spectra shall be multiplied by:

(Equation A5–12)

2. In the constant velocity region, the 5-percent damped acceleration spectra shall be multiplied by:

(Equation A5–13)

3. The spectral displacement ordinate, Sd, for a corresponding spectral acceleration, Sa, shall be determined from:

(Equation A5–14)

A509.3.3.5 Calculation of the performance point. The performance point shall represent the maximum roof displacement expected for the demand earthquake ground motion. When the displacement of intersection of the capacity spectrum defined in Section A509.3.3.2 and the demand spectrum defined in Section A509.3.3.4 is within 5 percent of the displacement of the trial performance point, api, dpi, used in Section A509.3.3.3, the trial performance point shall be considered the performance point. If the intersection of the capacity spectrum and the demand spectrum is not within the acceptable tolerance of 5 percent, a new trial performance point shall be selected and the analysis shall be repeated.

A509.3.4 Response limits. The inter–story drift between floors of the building and the corresponding strains in building components shall be checked at the performance point to verify acceptability under the demand earthquake ground motion. Performance shall be considered acceptable if building response parameters do not exceed the limitations outlined in Section A509.1.2.

A509.4 Displacement coefficient analysis procedure.

A509.4.1 General. This section presents a procedure for generalized nonlinear static analysis for verification of acceptable performance by comparing the available capacity to the earthquake demand.

Where inelastic torsional response is a dominant feature of overall response, the engineer shall use either a retrofit that reduces the torsional response or an alternative analysis procedure. Inelastic torsional response may be deemed to exist if there is torsional irregularity as defined in Section A508.2 present in any story.

The mathematical model of the building shall be determined in accordance with Section A509.1. The general procedure for execution of the displacement coefficient analysis shall be determined in accordance with Section A509.4.5.

Results of the displacement coefficient analysis procedure shall be checked using the applicable acceptance criteria specified in Section A509.1.2.

For three–dimensional analyses, the static lateral forces shall be imposed on the three–dimensional mathematical model corresponding to the mass distribution at each story level. Effects of accidental torsion shall be considered.

For two–dimensional analyses, the mathematical model describing the framing along each axis of the building shall be developed. The effects of horizontal torsion shall be considered by increasing the target displacement (see Section A509.4.2) by a displacement multiplier, h. The displacement multiplier is the ratio of the maximum displacement at any point on any floor diaphragm (including torsional effects for actual torsion and accidental torsion) to the average displacement on that diaphragm.

The behavior of foundation components and effects of soil–structure interaction shall be modeled or shown to be insignificant to building response.

A509.4.2 Target displacement (d t). The target displacement of the control node (typically the center of mass of the building's roof) shall be determined using the following equation:

(Equation)

Where:

C_θ = Modification factor to relate spectral displacement to expected building roof displacement. Value of C_θ can be estimated using any one of the following:

1. The first modal participation factor at the level of the control node.
2. The modal participation factor at the level of the control node computed using a shape vector corresponding to the deflected shape of the building at the target displacement.
3. The appropriate value from Table A509.4.2.

TABLE A509.4.2
VALUES OF MODIFICATION FACTOR, C0

(Delete table)

C_1 = Modification factor to relate expected maximum inelastic displacements to displacements for linear elastic response. C1 shall not be taken as less than 1.0.

= 1.0 for $T_e \geq T_\theta$

= $[1.0 + (R-1)T_\theta/T_e]/R$ for $T_e < T_\theta$

Where:

R = Strength ratio = (Equation)

V_y = Yield strength calculated using the results of static pushover analysis where the nonlinear base–shear roof–displacement curve of the building is characterized by a bilinear relation (see Section A509.4.5).

T_θ = Characteristic period of the response spectrum, defined as the period associated with the transition from the

constant acceleration segment of the spectrum to the constant velocity segment of the spectrum.
C_2 = Modification factor to represent the effect of hysteresis shape on maximum displacement response.
= 1.3 where $T>T_0$
= 1.1 where $T \geq T_0$

Exception: Where the stiffness of the structural component in a lateral–force–resisting system, which resists no less than 30 percent of the story shear, does not deteriorate at the target displacement level, C_2 may be assumed to be equal to 1.0.

S_a = Response spectral acceleration at the effective fundamental period and damping ratio of the building, g, in the direction under consideration.
T_e = Effective fundamental period of the building in the direction under consideration, per Section A509.4.5.

A509.4.3 Lateral load patterns. Two different vertical distributions of loads shall be used. The first load pattern, termed as the uniform pattern, shall be based on lateral forces proportional to the mass at each story level. The second pattern, called the modal pattern, shall be selected from one of the following:

1. A lateral load pattern represented by C_{vx}, if more than 75 percent of mass participates in the fundamental mode in the direction under consideration. C_{vx} is given by the following expression:

(Equation)

Where:

w_i = Portion of the total building weight, W, located on or assigned to floor level i.
h_i = Height in feet from base to floor level i.
w_x = Portion of the total building weight, W, located on or assigned to floor level x.
h_x = Height in feet from base to floor level x.
k = 1.0 for $T_e \leq 0.5$ sec.
= 2.0 for $T_e \geq 2.5$ sec.

Linear interpolation shall be used to estimate k for intermediate values of T_e.

2. A lateral load pattern proportional to the story inertia forces consistent with the story shear distribution computed by combination of modal responses using response spectrum analysis of the building, including a sufficient number of modes to capture 90 percent of the total seismic mass and the appropriate ground motion spectrum.

A509.4.4 Period determination. The effective fundamental period, T_e, in the direction under consideration, shall be determined using the force–displacement relation of the nonlinear static pushover analysis. The nonlinear relation between the base shear and target displacement of the control node shall be replaced by a bilinear relation to estimate the effective lateral stiffness, K_e, and the yield strength, V_y, of the building. The effective lateral stiffness shall be taken as the secant stiffness calculated at a base shear force equal to 60 percent of the yield strength. The effective fundamental period, T_e, shall then be calculated as:

(Equation)

Where:

T_i = Elastic fundamental period in the direction under consideration calculated by elastic dynamic analysis.
K_i = Elastic lateral stiffness of the building in the direction under consideration.
K_e = Effective lateral stiffness of the building in the direction under consideration.

A509.4.5 General execution procedure for the displacement coefficient analysis procedure. The general procedure for the execution of the displacement coefficient analysis procedure shall be as follows:

1. An elastic structural model shall be created that includes all components (existing and new) contributing significantly to the weight, strength, stiffness or stability of the structure, and whose behavior is important in satisfying the intended seismic performance.
2. The structural model shall be loaded with gravity loads before application of the lateral loads.
3. The mathematical model shall be subjected to incremental lateral loads using one of the lateral load patterns described in Section A509.4.3. At least two different load patterns shall be used in each principal direction.
4. The intensity of the lateral load shall be monotonically increased until the weakest component reaches a deformation at which there is a significant change in its stiffness. The stiffness properties of this "yielded" component shall be modified to reflect the post–yield behavior, and the modified structure shall be subjected to an increase in lateral loads (for load control) or displacements (for displacement control) using the same lateral load pattern.
5. The previous step shall be repeated as more components reach their yield strengths. At each stage, the internal forces and deformations (both elastic and plastic) of all components shall be computed.

~~6. The forces and deformations from all previous loading stages shall be accumulated to obtain the total force and deformations of all components at all stages.~~

~~7. The loading process shall be continued until unacceptable performance is detected or until a roof displacement is obtained that is larger than the maximum displacement expected in the design earthquake at the control node.~~

~~8. A plot of the control node displacement versus base shear at various stages shall be created. This plot is indicative of the nonlinear response of the structure, and changes in the slope of this load–displacement curve are indicative of the yielding of various components.~~

~~9. The load–displacement curve obtained in Item 8 shall be used to compute the effective period of the structure, which would then be used to estimate the target displacement (Section A509.4.2).~~

~~10. Once the target displacement has been determined, the accumulated forces and deformations at this displacement shall be used to evaluate the performance of various components.~~

~~11. If either the force–demands in the nonductile components or deformation–demands in the ductile components exceed the permissible values, then the component shall be deemed to violate the performance criterion, indicating that rehabilitation be performed for such elements.~~

~~The relation between base shear force and lateral displacement of the control node shall be established for control node displacements ranging between zero and 150 percent of the target displacement, d_t.~~

~~**A509.4.6 Acceptance criteria.** The inter–story drift between floors of the building and the corresponding strains in building components shall be checked at 150 percent of the target displacement, d_t, verify acceptability under the demand earthquake ground motion. Performance shall be considered acceptable if building response parameters do not exceed the limitations outlined in Section A509.1.2.~~

~~**Exception:** Where the effective stiffness, K_e, and the yield strength, V_y, of the building can be determined through rational analysis, the acceptance criteria may be determined based on 100 percent of the target displacement, d_t.~~

A509.2 Analysis, Design and Review Procedures.

A509.2.1 Analysis and Design. The existing or retrofitted structure shall be demonstrated to have the capability to sustain the deformation and acceleration response due to the specified earthquake ground motions. The registered design professional shall provide an evaluation of the response of the existing structure in its current configuration and condition to the ground motions specified. Any approach to analysis and design is permitted to be used provided that it is rational, consistent with established principles of mechanics, and uses known performance characteristics of materials and assemblages under cyclic loads typical of earthquake ground motions. Where the evaluation indicates the building does not meet the required performance objectives, then a retrofit or repair design shall be developed that meets the objectives and reflects the appropriate consideration of existing conditions to the satisfaction of the independent reviewer(s) and the Code Official.

A509.2.2 Review. The analysis, design, assumptions of material and system behavior, and conclusions shall be independently reviewed in accordance with Section 9.5.8.4 of ASCE 7.

Exceptions:

1. The jurisdiction is permitted to perform the review when qualified staff is available within the jurisdiction.

2. The Code Official is permitted to modify or waive the requirements for this review.

Reason: The Pseudo-nonlinear Dynamic Analysis Procedure, Capacity Spectrum Analysis Procedure, Displacement Coefficient Analysis Procedure are not completely defined by existing IEBC requirements in A509.2 through A509.4. Some of the requirements in existing A509.2 through A509.4 are no longer consistent with FEMA 356 and FEMA 440. These procedures are each in a state of flux pending further research and consensus development within the earthquake engineering profession. At the time of this code change, the Displacement Coefficient Analysis Procedure in FEMA 356 titled "Pre-Standard and Commentary for the Seismic Rehabilitation of Buildings" has not been successfully balloted as a national standard and is undergoing major revision. FEMA 440 “Improvement of Nonlinear Static Seismic Analysis Procedures” proposes a number of changes to the Coefficient Method and the Capacity Spectrum Method (Ref: Comartin, 13WCEE, A Summary FEMA 440: Improvement of Nonlinear Static Seismic Analysis Procedures). ASCE’s Standards Committee has not yet balloted FEMA 440. A number of other analytical developments are now available from researchers throughout the world for the Pseudo-nonlinear Dynamic Analysis Procedure and the Capacity Spectrum Method as well as new methods such as Incremental Response Spectra Analysis and Modal Pushover Analysis. (Ref: 13WCEE Proceedings)

Building Officials should permit the use of these and other procedures even though these methods are not yet standardized. But in many cases adjustments will be necessary to reflect specific conditions in buildings and the latest research. In light of these circumstances, the best way to ensure consistent, safe results in practice is to require designers and Building Officials to rely on independent peer reviews from qualified professionals. This proposal is consistent with ASCE 7 Minimum Design Loads for Buildings and Other Structures, which already requires independent review for these types of procedures for new construction.

Analysis: A question would be if the proponents Section A509.2.2, Exception 2 was redundant based on Section 104.11.

Cost Impact: None

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

EB102-04/05
Chapter 14

Proponent: Standards writing organizations as listed below.

Revise as follows:

ASHRAE	American Society of Heating, Refrigerating and Air Conditioning Engineers 1791 Tullie Circle, NE Atlanta, GA
62-04 ~~01~~	Ventilation for Acceptable Indoor Air Quality
ASME	American Society of Mechanical Engineers 3 Park Avenue New York, NY 10016
Standard reference number	Title
A 17.1-2004 ~~2000~~	Safety Code for Elevators and Escalators ~~with A17.1a 2002 Addenda~~
A112.19.2-2003 ~~1998~~	Vitreous China Plumbing Fixtures ~~(Reaffirmed 2002)~~
NFPA	National Fire Protection Agency 1 Batterymarch Park Quincy, MA 02269-9101
Standard reference number	Title
70-05 ~~02~~	National Electrical Code
101-03 ~~00~~	Life Safety Code

Reason: The *ICC Code Development Process for the International Codes* (Procedures) Section 4.5* requires the updating of referenced standards to be accomplished administratively, and be processed as a Code Proposal. In May 2004, a letter was sent to each developer of standards that are referenced in the I-Codes, asking them to provide ICC with a list of their standards in order to update to the current edition. Above is the list received of the referenced standards under the maintenance responsibility of the IEBC Committee.

> **4.5 Updating Standards:** The updating of standards referenced by the Codes shall be accomplished administratively by the appropriate code development committee in accordance with these full procedures except that multiple standards to be updated may be included in a single proposal.

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