CHAPTER 1
SCOPE AND ADMINISTRATION

Note: Chapter 1 is entirely Seattle amendments to the *International Existing Building Code* and is not underlined.

SECTION 101
SCOPE AND APPLICATION OF CODE

101.1 Title. This subtitle shall be known as the "International Existing Building Code." All references to the *International Existing Building Code* contained in this code mean the *Seattle Existing Building Code*.

101.2 Scope. This code applies to the *repair*, *alteration*, *change of occupancy*, *addition* to, relocation and maintenance of *existing buildings*.

Exception: Buildings within the scope of the *International Residential Code* shall comply with the *International Residential Code*.

101.3 Purpose. The purpose of this code is to provide minimum standards to safeguard life or limb, health, property and public welfare by regulating and controlling the design, construction, quality of materials, occupancy, location and maintenance of certain *existing buildings* and structures within the City and certain equipment in those buildings, as specifically regulated herein. The purpose of this code is to provide for and promote the health, safety and welfare of the general public, and not to create or otherwise establish or designate any particular class or group of persons who will or should be especially protected or benefited by the terms of this code.

101.4 Compliance. Except as specifically provided in this code, *additions*, *alterations*, *repairs* and *changes of occupancy* to, and relocation of any *building* or structure shall comply with the requirements of the code for new construction. Except as specifically provided in this code, *additions*, *alterations*, *repairs* and *changes of occupancy* to, and relocation of any *building* or structure shall be such that the *existing building* or structure is no less complying with the provisions of the *International Building Code* than the *existing building* or structure was prior to the *alteration, addition, repair, change of occupancy* or relocation.

101.4.1 Unless approved by the *code official*, this code does not justify conditions in buildings or structures that do not comply with the codes in effect at the time the building or structure was built, including permitted *additions*, *alterations*, *repairs*, *changes of occupancy* and relocations.

101.4.2 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* for new construction or with any current permit for such occupancy.

101.4.3 Buildings previously occupied. Buildings in existence at the time of the passage of this code that were legally constructed and occupied in accordance with the provisions of a prior code are permitted to have their existing occupancy continued, provided such occupancy is not unsafe.

101.4.3.1 Establishing occupancy for the record. An occupancy is permitted to be established for any date if:

1. The applicant can provide evidence satisfactory to the code official that the occupancy was in existence on that date, and
2. The building can be made to comply with the building code in effect on that date.

101.4.4 Compliance with retroactive ordinances. *Alterations* and *repairs* to *existing buildings* that are being made in response to a notice or order requiring compliance with the *Housing and Building Maintenance Code*, Subtitle II, Title 22 of the Seattle Municipal Code, the *Fire Code*, Subtitle VI, Title 22 of the Seattle Municipal Code, or other ordinances applicable to *existing buildings*, are permitted to be made in accordance with standards contained in those ordinances rather than the standards contained in this code.

101.5 Maintenance. Buildings and structures, and parts thereof, shall be maintained in a safe and sanitary condition. Devices and safeguards which are or were required by a code in effect when the building or structure was erected, altered or repaired shall be maintained in conformance with the code edition under which they were installed. The owner or the owner's designated agent shall be responsible for the maintenance of buildings and structures. To determine compliance with this subsection, the code official shall have the authority to require a building or structure to be reinspected. The requirements of this Chapter shall not provide the basis for removal or abrogation of fire protection and safety systems and devices in *existing buildings* or structures.

Exception: The code official is authorized to modify the requirements of this subsection where all or a portion of a building is unoccupied, closed off and reasonably secure from unlawful entry.

101.6 Internal Consistency. If in any specific case, different sections of this code specify different materials, methods of construction or other requirements, the most restrictive governs. If there is a conflict between a general requirement and a specific requirement, the specific requirement governs.

101.7 Referenced codes and standards. The codes and standards referenced in this code are considered part of the requirements of this code to the extent prescribed by each such reference. If differences occur between provisions of this code and referenced codes and standards, the provisions of this code apply.

101.8 References to other codes. Whenever an International, National or Uniform Code is referenced in this code, it means the Seattle edition of that code, including local amendments. References to the "Building Code," "Residential Code," "Fire Code," "Mechanical Code" and "Plumbing Code" mean the Seattle editions of those codes.

101.9 Appendices. Provisions in the appendices of the *International Existing Building Code* do not apply, with the exception of Chapters A1 and A3 through A6 of Appendix A, which are herein adopted.

101.10 Metric units. Wherever in this code there is a conflict between metric units of measurement and U.S. customary units, the U.S. customary units govern.

101.11 Impracticality. In cases where total compliance with all the requirements of this code is impractical, the applicant may arrange a pre-design conference with the design team and the code official. The applicant shall identify design solutions and modifications that conform to Section 101.12 or 101.13. The code official may waive specific requirements in this code that the code official determines to be impractical.

101.12 Modifications. The code official may modify the requirements of this code for individual cases if the code official finds: (1) there are practical difficulties involved in carrying out the provisions of this code; (2) the modification is in conformity with the intent and purpose of this code; and (3) the modification will provide a reasonable level of fire protection and structural integrity when considered together with other safety features of the building or other relevant circumstances. The code official may, but is not required to, record the approval of modifications and any relevant information in the files of the code official or on the approved permit plans.

101.13 Alternate materials, methods of construction and design. This code does not prevent the use of any material, design or method of construction not specifically allowed or prohibited by this code, provided the alternate has been approved and its use authorized by the code official.

The code official may approve an alternate, provided the code official finds that the proposed alternate complies with the provisions of this code, and that the alternate, when considered together with other safety features of the building or other relevant circumstances, will provide at least an equivalent level of strength, effectiveness, fire resistance, durability, safety and sanitation.

The code official may require that sufficient evidence or proof be submitted to reasonably substantiate any claims regarding the use or suitability of the alternate. The code official may, but is not required to, record the approval of code alternates and any relevant information in the files of the code official or on the construction documents.

101.14 Unsafe conditions. The code official shall have the authority to require the elimination of conditions deemed *unsafe* in accordance with *International Building Code* Section 102.

SECTION 102
ADMINISTRATION

102.1 General. *Additions, alterations, repairs* and *changes of occupancy* to and relocations of buildings and structures are subject to Chapter 1 of the *Seattle Building Code*.

CHAPTER 2
DEFINITIONS

User note:

About this chapter: *Codes, by their very nature, are technical documents. Every word, term and punctuation mark can add to or change the meaning of a technical requirement. It is necessary to maintain a consensus on the specific meaning of each term contained in the code. Chapter 2 performs this function by stating clearly what specific terms mean for the purpose of the code.*

SECTION 201
GENERAL

201.1 Scope. Unless otherwise expressly stated, the following words and terms shall, for the purposes of this code, have the meanings shown in this chapter.

201.2 Interchangeability. Words used in the present tense include the future; words stated in the masculine gender include the feminine and neuter; the singular number includes the plural and the plural, the singular.

201.3 Terms defined in other codes. Where terms are not defined in this code and are defined in the other International Codes, such terms shall have the meanings ascribed to them in those codes.

201.4 Terms not defined. Where terms are not defined through the methods authorized by this chapter, such terms shall have ordinarily accepted meanings such as the context implies.

SECTION 202
GENERAL DEFINITIONS

[A] ADDITION. An extension or increase in floor area, number of stories, or height of a building or structure.

[W] ADULT FAMILY HOME. A *dwelling*, licensed by the State of Washington Department of Social and Health Services, in which a person or persons provide personal care, special care, room and board to more than one but not more than six adults who are not related by blood or marriage to the person or persons providing the services. An existing adult family home may provide services to up to eight adults upon approval from the Department of Social and Health Services in accordance with RCW 70.128.066.

[A] ALTERATION. Any construction or renovation to an *existing structure* other than a *repair* or *addition*.

[A] APPROVED. Acceptable to the *code official*.

[A] BUILDING. Any structure utilized or intended for supporting or sheltering any occupancy.

[S][A] CHANGE OF OCCUPANCY. ((~~Any of the following shall be considered as a change of occupancy where the current *International Building Code* requires a greater degree of safety, accessibility, structural strength, fire protection, means of egress, ventilation or sanitation than is existing in the current building or structure:~~)) A change in the use of a building or a portion of a building that results in any of the following:

1. Any change in the occupancy classification. ((~~of a building or structure.~~))
2. Any change ((~~in the purpose of, or a change in the level of activity within, a building or structure~~)) from one group to another group within an occupancy classification.
3. A change of use within a group for which there is a change in application of the requirements of this code.

[S] ((~~[A] CHANGE OF USE.~~ ~~A change in the use of a building or a portion of a building, within the same group classification, for which there is a change in application of the code requirements.~~))

[S][A] CODE OFFICIAL. The ((~~officer or other designated authority charged with the administration and enforcement of this code~~)) Director of the Department of Construction and Inspections and authorized representatives.

[S] DAMAGE RATIO. The ratio between the cost of work and the estimated replacement cost of the building, expressed as a percentage.

[S] ((~~[BS] DANGEROUS.~~ ~~Any building, structure or portion thereof that meets any of the conditions described below shall be deemed dangerous:~~

~~1. The building or structure has collapsed, has partially collapsed, has moved off its foundation or lacks the necessary support of the ground.~~

~~2. There exists a significant risk of collapse, detachment or dislodgement of any portion, member, appurtenance or ornamentation of the building or structure under permanent, routine or frequent loads; under actual loads already in effect; or under snow, wind, rain, flood, earthquake or other environmental loads when such loads are imminent.~~))

[A] DEFERRED SUBMITTAL. Those portions of the design that are not submitted at the time of the application and that are to be submitted to the *code official* within a specified period.

[S] ((~~[BS] DISPROPORTIONATE EARTHQUAKE DAMAGE.~~ ~~A condition of earthquake-related damage where both of the following occur:~~

~~1. The 0.3-second spectral acceleration at the building site as estimated by the United States Geological Survey for the earthquake in question is less than 40 percent of the mapped acceleration parameter SS.~~

~~2. The vertical elements of the lateral force-resisting system have suffered damage such that the lateral load-carrying capacity of any story in any horizontal direction has been reduced by more than 10 percent from its predamage condition.~~))

[BE] EMERGENCY ESCAPE AND RESCUE OPENING. An operable exterior window, door or other similar device that provides for a means of escape and access for rescue in the event of an emergency.

EQUIPMENT OR FIXTURE. Any plumbing, heating, electrical, ventilating, air conditioning, refrigerating and fire protection equipment; and elevators, dumbwaiters, escalators, boilers, pressure vessels and other mechanical facilities; or installations that are related to building services. Equipment or fixture shall not include manufacturing, production or process equipment, but shall include connections from building service to process equipment.

[S][A] EXISTING BUILDING, EXISTING STRUCTURE. A building or structure erected prior to the date of adoption of ((~~the appropriate~~)) this code, or one for which a ((~~legal building permit~~)) valid Certificate of Occupancy has been issued, or one that has passed a final inspection.

[S] ((~~[A] EXISTING STRUCTURE.~~ ~~A structure erected prior to the date of adoption of the appropriate code, or one for which a legal building permit has been issued.~~))

[BF] EXTERIOR WALL COVERING. A material or assembly of materials applied on the exterior side of exterior walls for the purpose of providing a weather-resisting barrier, insulation or for aesthetics, including but not limited to, veneers, siding, exterior insulation and finish systems, architectural trim and embellishments, such as cornices, soffits, facias, gutters and leaders.

[BF] EXTERIOR WALL ENVELOPE. A system or assembly of exterior wall components, including exterior wall finish materials, that provides protection of the building structural members, including framing and sheathing materials, and conditioned interior space from the detrimental effects of the exterior environment.

[A] FACILITY. All or any portion of buildings, structures, site improvements, elements and pedestrian or vehicular routes located on a site.

[BS] FLOOD HAZARD AREA. The greater of the following two areas:

1. The area within a flood plain subject to a 1-percent or greater chance of flooding in any year.
2. The area designated as a *flood hazard area* on a community's flood hazard map, or otherwise legally designated.

[S] ((~~[A] HISTORIC BUILDING.~~ ~~Any building or structure that is one or more of the following:~~

~~1. Listed, or certified as eligible for listing, by the State Historic Preservation Officer or the Keeper of the National Register of Historic Places, in the National Register of Historic Places.~~

~~2. Designated as historic under an applicable state or local law.~~

~~3. Certified as a contributing resource within a National Register, state designated or locally designated historic district.~~))

[S] LANDMARK. A building or structure that is subject to a requirement to obtain a certificate of approval from the City Landmarks Preservation Board before altering or making significant changes to specific features or characteristics, that has been nominated for designation and the City Landmarks Preservation Board has not issued a determination regarding designation, that has been designated for preservation by the City Landmarks Preservation Board, that has been designated for preservation by the State of Washington, that has been listed or determined eligible to be listed in the National Register of Historic Places, or that is located in a landmark or special review district subject to a requirement to obtain a certificate of approval before making a change to the external appearance of a structure.

[S] LIFE SAFETY PERFORMANCE LEVEL. A post-earthquake damage state that includes damage to structural elements, but the building retains a margin against partial or total collapse. Injuries may occur, but the overall risk of life-threatening injury as a result of structural damage is expected to be low.

[BF] NONCOMBUSTIBLE MATERIAL. A material that, under the conditions anticipated, will not ignite or burn when subjected to fire or heat. Materials that pass ASTM E136 are considered *noncombustible materials*.

PRIMARY FUNCTION. A *primary function* is a major activity for which the *facility* is intended. Areas that contain a *primary function* include, but are not limited to, the customer services lobby of a bank, the dining area of a cafeteria, the meeting rooms in a conference center, as well as offices and other work areas in which the activities of the public accommodation or other private entity using the *facility* are carried out. Mechanical rooms, boiler rooms, supply storage rooms, employee lounges or locker rooms, janitorial closets, entrances, corridors and restrooms are not areas containing a *primary function*.

[A] REGISTERED DESIGN PROFESSIONAL IN RESPONSIBLE CHARGE. A registered design professional engaged by the owner or the owner's authorized agent to review and coordinate certain aspects of the project, as determined by the *code official*, for compatibility with the design of the building or structure, including submittal documents prepared by others, *deferred submittal* documents and phased submittal documents.

REHABILITATION. Any work, as described by the categories of work defined herein, undertaken in an *existing building.*

[A] RELOCATABLE BUILDING. A partially or completely assembled building constructed and designed to be reused multiple times and transported to different building sites.

[A] REPAIR. The reconstruction, replacement or renewal of any part of an *existing building* for the purpose of its maintenance or to correct damage.

[BS] REROOFING. The process of recovering or replacing an existing roof covering. See "*Roof recover*" and "*Roof replacement*."

[S] RETROFITTED UNREINFORCED MASONRY (URM) BUILDING. A *URM building* that meets a minimally acceptable level of life safety risk from earthquakes by demonstrating compliance with Section 304.5.1.

Note: *Retrofitted URM buildings* are eligible for a status change in the City of Seattle URM database.

[BS] RISK CATEGORY. A categorization of buildings and other structures for determination of flood, wind, snow, ice and earthquake loads based on the risk associated with unacceptable performance, as provided in Section 1604.5 of the *International Building Code*.

[BS] ROOF COATING. A fluid-applied adhered coating used for roof maintenance, *roof repair* or as a component of a roof covering system or roof assembly.

[BS] ROOF RECOVER. The process of installing an additional roof covering over a prepared existing roof covering without removing the existing roof covering.

[BS] ROOF REPAIR. Reconstruction or renewal of any part of an existing roof for the purpose of correcting damage or restoring the predamage condition.

[BS] ROOF REPLACEMENT. The process of removing the existing roof covering, repairing any damaged substrate and installing a new roof covering.

[BS] SEISMIC FORCES. The loads, forces and requirements prescribed herein, related to the response of the building to earthquake motions, to be used in the analysis and design of the structure and its components. Seismic forces are considered either full or reduced, as provided in Chapter 3.

[S] SUBSTANTIAL ALTERATION. See Section 311.1.

[BS] SUBSTANTIAL DAMAGE. For the purpose of determining compliance with the flood provisions of this code, damage of any origin sustained by a structure whereby the cost of restoring the structure to its before-damaged condition would equal or exceed 50 percent of the market value of the structure before the damage occurred.

[S][BS] SUBSTANTIAL IMPROVEMENT. ((~~For the purpose of determining compliance with the flood provisions of this code, any~~)) Any *repair*, *alteration*, *addition* or improvement of a building or structure, the cost of which, in any five-year period, equals or exceeds 50 percent of the market value of the structure, before the improvement or *repair* is started. If the structure has sustained *substantial damage*, any *repairs* are considered *substantial improvement* regardless of the actual *repair* work performed. The term does not, however, include either of the following:

1. Any project for improvement of a building required to correct existing health, sanitary or safety code violations identified by the *code official* and that is the minimum necessary to ensure safe living conditions.
2. Any *alteration* of a ((~~historic~~)) *landmark* structure, provided that the *alteration* will not preclude the structure's continued designation as a ((~~historic~~)) *landmark* structure.

[S] ((~~[BS] SUBSTANTIAL STRUCTURAL ALTERATION.~~ ~~An *alteration* in which the gravity load-carrying structural elements altered within a 5-year period support more than 30 percent of the total floor and roof area of the building or structure. The areas to be counted toward the 30 percent shall include mezzanines, penthouses, and in-filled courts and shafts tributary to the altered structural elements.~~))

[S] ((~~[BS] SUBSTANTIAL STRUCTURAL DAMAGE.~~ ~~A condition where any of the following apply:~~

~~1. The vertical elements of the lateral force-resisting system have suffered damage such that the lateral load-carrying capacity of any story in any horizontal direction has been reduced by more than 33 percent from its predamage condition.~~

~~2. The capacity of any vertical component carrying gravity load, or any group of such components, that has a tributary area 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 predamage 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.~~

~~3. The capacity of any structural component carrying snow load, or any group of such components, that supports more than 30 percent of the roof area of similar construction has been reduced more than 20 percent from its predamage condition, and the remaining capacity with respect to dead, live and snow loads is less than 75 percent of that required by the *International Building Code* for new buildings of similar structure, purpose and location.~~))

TECHNICALLY INFEASIBLE. An *alteration* of a *facility* that has little likelihood of being accomplished because the existing structural conditions require the removal or *alteration* of a load-bearing member that is an essential part of the structural frame, or because other existing physical or site constraints prohibit modification or addition of elements, spaces or features which are in full and strict compliance with the minimum requirements for new construction and which are necessary to provide accessibility.

[S] UNSAFE. ((~~Buildings, structures or equipment that are unsanitary, or that are deficient due to inadequate means of egress *facilities*, inadequate light and ventilation, or that constitute a fire hazard, or in which the structure or individual structural members meet the definition of *"Dangerous,"* or that are otherwise dangerous to human life or the public welfare, or that involve illegal or improper occupancy or inadequate maintenance shall be deemed *unsafe*. A vacant structure that is not secured against entry shall be deemed *unsafe*.~~)) Structurally unsound, provided with inadequate egress, constituting a fire hazard, or otherwise dangerous to human life, or constituting a hazard to safety, health or public welfare.

[S] UNREINFORCED MASONRY (URM). Includes burned clay, concrete or sand-lime brick, hollow clay block, or hollow clay tile.

[S] UNREINFORCED MASONRY (URM) BUILDING. A building where one or more *URM* walls provide the primary support for vertical loads from floors or roofs and the *URM* walls rely on the tensile strength of masonry units, mortar and grout in resisting design loads.

Note: *URM buildings* were generally constructed prior to 1945 and unlawful after adoption of the 1973 Uniform Building Code on May 7, 1977.

[S] WORK AREA. That portion or portions of a building consisting of all reconfigured spaces as indicated on the construction documents. Work area excludes other portions of the building where incidental work entailed by the intended work must be performed and portions of the building where work not initially intended by the owner is specifically required by this code. The boundary of the work area includes all spaces not physically separated from rooms or spaces where work is being performed.

CHAPTER 3
PROVISIONS FOR ALL COMPLIANCE METHODS

User note:

About this chapter: *Chapter 3 explains the three compliance options for alterations and additions available in the code. In addition, this chapter also lays out the methods to be used for seismic design and evaluation throughout this code. Finally, this chapter clarifies that provisions in other I-Codes® related to repairs, alterations, additions, relocation and changes of occupancy must also be addressed unless they conflict with this code. In that case, this code takes precedence.*

SECTION 301
((~~ADMINISTRATION~~)) COMPLIANCE METHODS

[S] 301.1 Applicability. All *repairs*, *alterations*, *changes of occupancy*, *additions* and relocations of buildings shall comply with this chapter. The ((~~*repair*~~,)) *alteration*, *change of occupancy*, *addition* or relocation of all *existing buildings* and structures shall also comply with Section 301.2, 301.3 or 301.4. ((~~The provisions of Sections 302 through 309 shall apply to all *alterations*, *repairs*, *additions*,~~ relocation of structures and ~~*changes of occupancy*~~ regardless of compliance method.))

301.1.1 Bleachers, grandstands and folding and telescopic seating. Existing bleachers, grandstands and folding and telescopic seating shall comply with ICC 300.

301.2 Repairs. *Repairs* shall comply with the requirements of Chapter 4.

[S] 301.3 Alteration, addition or change of occupancy. The *alteration*, *addition* or *change of occupancy* of all *existing buildings* and structures shall also comply with one of the methods listed in Section 301.3.1, 301.3.2 or 301.3.3 as selected by the applicant. Sections 301.3.1 through 301.3.3 shall not be applied in combination with each other.

Exception: Subject to the approval of the *code official*, *alterations* ((~~complying~~)) that comply with the laws in existence at the time the building or the affected portion of the building was built shall be considered in compliance with the provisions of this code unless the building is undergoing a *substantial alteration*. New structural members added as part of the *alteration* shall comply with the *International Building Code*. This exception shall not apply to the following:

1. *Alterations* for accessibility required by Section 306.
2. *Alterations* that constitute *substantial improvement* in *flood hazard areas*, which shall comply with ((~~Sections 503.2, 701.3 or 1301.3.3~~)) Section 314.

((~~3. Structural provisions of Section 304, Chapter 5 or to the structural provisions of Sections 706, 805 and 906.~~))

301.3.1 Prescriptive compliance method. *Alterations*, *additions* and *changes of occupancy* complying with Chapter 5 of this code in buildings complying with the *International Fire Code* shall be considered in compliance with the provisions of this code.

301.3.2 Work area compliance method. *Alterations*, *additions* and *changes of occupancy* complying with the applicable requirements of Chapters 6 through 12 of this code shall be considered in compliance with the provisions of this code.

301.3.3 Performance compliance method. *Alterations*, *additions* and *changes of occupancy* complying with Chapter 13 of this code shall be considered in compliance with the provisions of this code.

[S] 301.4 Relocated buildings. Relocated buildings shall comply with the requirements of ((~~Chapter 14~~)) Section 313.

[S] SECTION 302
((~~GENERAL PROVISIONS~~))
ADDITIONAL REQUIREMENTS FOR ALL COMPLIANCE METHODS

[S] 302.1 ((~~Dangerous conditions~~)) Reserved. ((~~The *code official* shall have the authority to require the elimination of conditions deemed *dangerous*.~~))

[S] 302.2 Additional codes. ((~~*Alterations*~~)) Regardless of the compliance method, *alterations*, *repairs*, *additions* and *changes of occupancy* to, or relocation of, *existing buildings* and structures shall comply with the provisions for *alterations*, *repairs*, *additions* and *changes of occupancy* or relocation, respectively, in this code and the *International Energy Conservation Code*, *International Fire Code*, *International Fuel Gas Code*, *International Mechanical Code*, ((~~*International*~~)) *Uniform Plumbing Code*, ((~~*International Private Sewage Disposal Code*, *International Property Maintenance Code*, *International Residential Code*~~)) *Seattle Boiler and Pressure Vessel Code*, *Seattle Electrical Code* and NFPA 70. Elevators and other conveyances shall

comply with the *International Building Code*. Where provisions of the other codes conflict with provisions of this code, the provisions of this code shall take precedence.

Note: Additional requirements relating to elevators and other conveyances are in the Seattle Building Code. Most requirements are located in Chapter 30.

302.2.1 Additional codes in health care. In existing Group I-2 occupancies, ambulatory health care *facilities*, outpatient clinics and hyperbaric *facilities*, *alterations*, *repairs*, *additions* and *changes of occupancy* to, or relocation of, *existing buildings* and structures shall also comply with NFPA 99.

[S] 302.2.2 Fire prevention. Except as specifically provided for in this code, the provisions of the *International Fire Code* shall apply to matters affecting or relating to structures, processes and premises regarding:

1. The hazard of fire and explosion arising from the storage, handling or use of structures, materials or devices;
2. Conditions hazardous to life, property or public welfare in the occupancy of structures or premises; and
3. The construction, extension, *repair*, *alteration* or removal of fire suppression and alarm systems or fire hazards in the structure or on the premises from occupancy or operation.

[S] 302.3 Existing materials. Materials already in use in a building ((~~in compliance~~)) complying with requirements or approvals in effect at the time of their erection or installation shall be permitted to remain in use unless ((~~determined~~)) the materials are deemed unsafe by the code official. ((~~to be *unsafe*.~~))

302.4 New and replacement materials. Except as otherwise required or permitted by this code, materials permitted by the applicable code for new construction shall be used. Like materials shall be permitted for *repairs* and *alterations*, provided that *unsafe* conditions are not created. Hazardous materials shall not be used where the code for new construction would not permit their use in buildings of similar occupancy, purpose and location.

[BS] 302.4.1 New structural members and connections. New structural members and connections shall comply with the detailing provisions of the *International Building Code* for new buildings of similar structure, purpose and location.

Exception: Where alternative design criteria are specifically permitted.

302.5 Occupancy and use. Where determining the appropriate application of the referenced sections of this code, the occupancy and use of a building shall be determined in accordance with Chapter 3 of the *International Building Code*.

[S] 302.6 Safeguards during construction. Regardless of compliance method, *alterations*, repairs, *additions* and *changes of occupancy* to, or relocation of, *existing buildings* and structures shall comply with the provisions of Chapter 15.

[S] 302.7 Occupant load increases in Group A occupancies. Regardless of which compliance method is used, when the occupant load in an existing Group A occupancy is increased, an automatic sprinkler system shall be installed in the fire area containing the Group A occupancy if a sprinkler system would be required by *International Building Code* Section 903.2.1 for new construction.

Exception: A sprinkler system is not required if all the following conditions are met:

1. The increase in occupant load is either 50 occupants or less, or no more than 10 percent of the occupant load of the existing Group A occupancy, whichever is greater; and
2. The existing means of egress has adequate capacity to accommodate the additional occupant load; and
3. The total occupant load in the Group A occupancy does not exceed one occupant per 5 square feet; and
4. The increase in occupant load is not part of a *substantial alteration*.

[S] 302.8 Unsafe building appendages. Parapet walls, cornices, spires, towers, tanks, statuary and other appendages or structural members that are supported by, attached to, or a part of a building and that are in a deteriorated condition or are otherwise unable to sustain the design loads that are specified in this code, are hereby designated as *unsafe* building appendages. All such *unsafe* building appendages are public nuisances and shall be abated in accordance with Section 101.14.

[S] 302.9 Unreinforced masonry chimneys. Whenever an unreinforced masonry chimney is altered or *repaired*, or when the building in which such a chimney is located undergoes *substantial alteration*, the chimney shall conform to rules promulgated by the code official.

[S] ((~~SECTION 303 STORM SHELTERS~~

~~**303.1 Storm shelters.** This section applies to the construction of storm shelters constructed as rooms or spaces within *existing buildings* for the purpose of providing protection during storms that produce high winds, such as tornados and hurricanes. Such structures shall be designated to be hurricane shelters, tornado shelters, or combined hurricane and tornado shelters. Such structures shall be constructed in accordance with this code and ICC 500.~~

~~**303.2 Addition to a Group E occupancy.** Where an *addition* is added to an existing Group E occupancy located in an area where the shelter design wind speed for tornados is 250 mph (402.3 km/h) in accordance with Figure 304.2(1) of ICC 500 and the occupant load in the *addition* is 50 or more, the *addition* shall have a storm shelter constructed in accordance with ICC 500.~~ **

~~**Exceptions:**~~

~~1. Group E day care *facilities*.~~

~~2. Group E occupancies accessory to places of religious worship.~~

~~3. *Additions* meeting the requirements for shelter design in ICC 500.~~

~~**303.2.1 Required occupant capacity.** The required occupant capacity of the storm shelter shall include all buildings on the site, and shall be the total occupant load of the classrooms, vocational rooms and offices in the Group E occupancy.~~

~~**Exceptions:**~~

~~1. Where an *addition* is being added on an existing Group E site, and where the *addition* is not of sufficient size to accommodate the required occupant capacity of the storm shelter for all of the buildings on-site, the storm shelter shall at a minimum accommodate the required capacity for the *addition*.~~

~~2. Where *approved* by the *code official*, the required occupant capacity of the shelter shall be permitted to be reduced by the occupant capacity of any existing storm shelters on the site.~~

~~**303.2.2 Occupancy classification.** The occupancy classification for storm shelters shall be determined in accordance with Section 423.3 of the *International Building Code*.~~))

[S] SECTION 304
STRUCTURAL ((~~DESIGN LOADS AND EVALUATION AND DESIGN PROCEDURES~~)) REQUIREMENTS FOR ALL COMPLIANCE METHODS

[S] 304.1 Structural provisions for alterations. Alterations to any building or structure shall comply with the requirements of Sections 304.1.1 through 304.1.8.

[BS] 304.1.1 New structural elements. New structural elements in alterations, including connections and anchorage, shall comply with the International Building Code.

[BS] 304.1.2 Minimum design loads. The minimum design loads on existing elements of a structure that do not support additional loads as a result of an *alteration* shall be the loads applicable at the time the building was constructed.

[BS] 304.1.3 Existing structural elements carrying gravity load. Any existing gravity load-carrying structural element for which an *alteration* causes an increase in design ((~~dead, live or snow~~)) gravity load ((~~, including snow drift effects,~~)) of more than 5 percent shall be strengthened, supplemented, replaced or otherwise altered as needed to carry the increased gravity ((~~loads~~)) load required by the *International Building Code* for new structures. Any existing gravity load-carrying structural element whose gravity load-carrying capacity is decreased as part of the *alteration* shall be shown to have the capacity to resist the applicable design ((~~dead, live and snow~~)) gravity loads ((~~including snow drift effects~~)) required by the *International Building Code* for new structures. **

((~~Exceptions~~)) Exception: ((~~1.~~)) Buildings of Group R occupancy with not more than five dwelling or sleeping units used solely for residential purposes where the ((~~altered~~)) existing building and its alteration ((~~complies~~)) comply with the conventional light-frame construction methods of the *International Building Code*. ((~~or the provisions of the *International Residential Code*.~~

~~2. Buildings in which the increased dead load is due entirely to the addition of a second layer of roof covering weighing 3 pounds per square foot (0.1437 kN/m^2) or less over an existing single layer of roof covering.~~))

[BS] ((~~304.1~~)) 304.1.3.1 Live loads. Where an *addition* or *alteration* does not result in increased design live load, existing gravity load-carrying structural elements shall be permitted to be evaluated and designed for live loads *approved* prior to the *addition* or *alteration*. If the *approved* live load is less than that required by Section 1607 of the *International Building Code*, the area designated for the nonconforming live load shall be posted with placards of *approved* design indicating the *approved* live load. Where the *addition* or *alteration* results in increased design live load, the live load required by Section 1607 of the *International Building Code* shall be used.

[BS] 304.1.4 Existing structural elements carrying lateral load. ((~~Except as permitted by Section 503.13, where~~)) Where the *alteration* increases design lateral loads in accordance with Section 1609 or 1613 of the *International Building Code*, or where the *alteration* results in a prohibited structural irregularity as defined in ASCE 7, or where the *alteration* decreases the capacity of any existing lateral load-carrying structural element, the structure of the altered building or structure shall be shown to meet the requirements of Sections 1609 and 1613 of the *International Building Code*. Reduced *International Building Code*-level seismic forces in accordance with Section 304.4.2 shall be permitted. **

Exception: Any existing lateral load-carrying structural element whose demand-capacity ratio with the *alteration* considered is not more than 10 percent greater than its demand-capacity ratio with the *alteration* ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with Sections 1609 and 1613 of the *International Building Code*. Reduced *International Building Code*–level seismic forces in accordance with Section 304.4.2 shall be permitted. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of *additions* and *alterations* since original construction.

** **[BS] 304.1.5 ((~~Anchorage~~)) Wall anchorage for unreinforced masonry walls in major alterations.** Where the ((~~*work area*~~)) portion of the building undergoing the intended *alteration* exceeds 50 percent of the aggregate area of the building, ((~~area,~~)) the building is assigned to Seismic Design Category C, D, E or F, and the building's structural system includes unreinforced masonry ((~~bearing~~)) walls, the *alteration* work shall include installation of wall anchors at the ((~~floor and~~)) roof ((~~lines~~)) line to resist seismic forces, unless an evaluation demonstrates compliance of existing wall anchorage. ((~~Reduced~~)) For purposes of this section, reduced design seismic forces shall be permitted.

** **[BS] 304.1.6 Anchorage of unreinforced masonry partitions in major alterations.** Where the *work area* exceeds 50 percent of the building area, and where the building is assigned to Seismic Design Category C, D, E or F, unreinforced masonry partitions and nonstructural walls within the *work area* and adjacent to egress paths from the *work area* shall be anchored, removed or altered to resist out-of-plane seismic forces, unless an evaluation demonstrates compliance of such items. Use of reduced seismic forces shall be permitted.

** **[W][S][BS] 304.1.7 Voluntary ((~~lateral force-resisting system alterations~~)) seismic improvements.** ((~~Structural *alterations*~~)) *Alterations* to existing structural elements or *additions* of new structural elements that are ((~~intended exclusively to improve the lateral force-resisting system and are~~)) not otherwise required by ((~~other sections of this code~~)) this chapter and are initiated for the purpose of improving the performance of the seismic force-resisting system of an existing structure or the performance of seismic bracing or anchorage of existing nonstructural elements ((~~shall not be required to meet the requirements of Section 1609 or Section 1613 of the *International Building Code*, provided that all of the following apply~~)) shall be permitted, if an engineering analysis is submitted demonstrating the following:

((~~1. The capacity of existing structural systems to resist forces is not reduced.~~))

1. The altered structure and the altered nonstructural elements are no less conforming to the provisions of the *International Building Code* with respect to earthquake design than they were prior to the *alteration*.

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

2. New structural elements are detailed and connected to existing or new structural elements as required by the ((~~*International Building Code* for new construction~~)) selected design criteria.

   2.1. Where approved, the new lateral force-resisting systems are permitted to be of a type designated as "Ordinary" or "Intermediate" where ASCE 7 Table 12.2-1 states these types of systems are not permitted provided that both of the following apply:

      2.1.1. The selected design criteria is the *International Building Code*.

      2.1.2. The new "Ordinary" or "Intermediate" system provides deformation compatibility with the existing lateral force-resisting system.

3. New or relocated nonstructural elements are detailed and connected to existing or new structural elements as required ((~~by the *International Building Code*~~)) for new construction.

4. The *alterations* do not create a structural irregularity as defined in ASCE 7 or make an existing structural irregularity more severe.

((~~[BS] 304.2 Snow loads on adjacent buildings.~~ ~~Where an *alteration* or *addition* changes the potential snow drift effects on an adjacent building, the *code official* is authorized to enforce Section 7.12 of ASCE 7.~~))

** **[S] 304.2 ((~~Seismic loads (seismic force-resisting system)~~)) Structural provisions for changes of occupancy.** Where a *change of occupancy* results in a ((~~building~~)) structure being ((~~assigned~~)) reclassified to a higher *risk category* determined in accordance with Table 1604.5 of the *International Building Code*, or where the change is from a Group S or Group U occupancy to any occupancy other than Group S or Group U, the ((~~building~~)) structure shall ((~~satisfy~~)) conform to the seismic requirements for a new structure of the higher risk category. For purposes of this section, compliance with ASCE 41, using a Tier 3 procedure and the two-level performance objective in Table 304.4.1 for the applicable risk category, shall be deemed to meet requirements of Section 1613 of the *International Building Code*. ((~~for the new *risk category* using full seismic forces.~~))

((**Exceptions:**

1. Where the area of the new occupancy is less than 10 percent of the building area, the occupancy is not changing from a Group S or Group U occupancy, and the new occupancy is not assigned to *Risk Category* IV, compliance with this section is not required. The cumulative effect of occupancy changes over time shall be considered.
2. Where a *change of use* results in a building being reclassified from *Risk Category* I or II to Risk Category III and the seismic coefficient, S_{DS}, is less than 0.33, compliance with this section is not required.
3. Unreinforced masonry bearing wall buildings assigned to *Risk Category* III and to Seismic Design Category A or B, shall be permitted to use Appendix Chapter A1 of this code.
4. Where the change is from a Group S or Group U occupancy and there is no change of risk category, use of reduced seismic forces shall be permitted.))

Exception: Specific seismic detailing requirements of Section 1613 of the *International Building Code* for a new structure shall not be required to be met where the seismic performance is shown to be equivalent to that of a new structure. A demonstration of equivalence shall consider the regularity, overstrength, redundancy and ductility of the structure.

[S] 304.3 Structural provisions for additions. *Additions* to any building or structure shall comply with the requirements of Sections 304.3.1 through 304.3.3.

[S][BS] 304.3.1 New structural elements. New structural elements in additions, including connections and anchorage, shall comply with the International Building Code.

[BS] 304.3.2 Existing structural elements carrying gravity load. Any existing gravity load-carrying structural element for which an *addition* and its related *alterations* cause an increase in design ((dead, live or snow)) gravity load ((, including snow drift effects,)) of more than 5 percent shall be strengthened, supplemented, replaced or otherwise altered as needed to carry the increased gravity ((loads)) load required by the *International Building Code* for new structures. Any existing gravity load-carrying structural element whose ((vertical)) gravity load-carrying capacity is decreased ((as part of the *addition* and its related *alterations*)) shall be considered ((to be)) an altered element subject to the requirements of Section ((503.3)) 304.1.3. Any existing element that will form part of the lateral load path for any part of the *addition* shall be considered ((to be)) an existing lateral load-carrying structural element subject to the requirements of Section ((502.5)) 304.3.3. **

((**Exception:** Buildings of Group R occupancy with not more than five dwelling or sleeping units used solely for residential purposes where the *existing building* and the *addition* together comply with the conventional light-frame construction methods of the *International Building Code* or the provisions of the *International Residential Code*.))

[BS] 304.3.2.1 Design live load. Where the *addition* does not result in increased design live load, existing gravity load-carrying structural elements shall be permitted to be evaluated and designed for live loads *approved* prior to the *addition*. If the *approved* live load is less than that required by Section 1607 of the *International Building Code*, the area designed for the nonconforming live load shall be posted with placards of *approved* design indicating the *approved* live load. Where the *addition* does result in increased design live load, the live load required by Section 1607 of the *International Building Code* shall be used.

[BS] 304.3.3 Existing structural elements carrying lateral load. Where the *addition* is structurally independent of the *existing structure*, existing lateral load-carrying structural elements shall be permitted to remain unaltered. Where the *addition* is not structurally independent of the *existing structure*, the *existing structure* and its *addition* acting together as a single structure shall be shown to meet the requirements of Sections 1609 and 1613 of the *International Building Code*. ((using full seismic forces.)) For purposes of this section, compliance with ASCE 41, using a Tier 3 procedure and the two-level performance objective in Table 304.4.1 for the applicable risk category, shall be deemed to meet the requirements of Section 1613 of the *International Building Code*. **

((**Exceptions**)) **Exception:** ((1.)) Any existing lateral load-carrying structural element whose demand-capacity ratio with the *addition* considered is not more than 10 percent greater than its demand-capacity ratio with the *addition* ignored shall be permitted to remain unaltered. For purposes of calculating demand-capacity ratios, the demand shall consider applicable load combinations with design lateral loads or forces in accordance with Sections 1609 and 1613 of the *International Building Code*. For purposes of this exception, comparisons of demand-capacity ratios and calculation of design lateral loads, forces and capacities shall account for the cumulative effects of *additions* and *alterations* since original construction.

((2. Buildings of Group R occupancy with not more than five dwelling or sleeping units used solely for residential purposes where the *existing building* and the addition together comply with the conventional light-frame construction methods of the *International Building Code* or the provisions of the *International Residential Code*.))

[S][BS] ((304.3)) 304.4 Seismic evaluation and design procedures. Where required, seismic evaluation or design shall be based on the procedures and criteria ((in this section, regardless of which compliance method is used)) specified in the *International Building Code* or ASCE 41. The procedures contained in Appendix A of this code shall be permitted to be used as specified in Section 304.4.2.

[BS] ((~~304.3.1~~)) 304.4.1 Compliance with ((~~full~~)) International Building Code–level seismic forces. Where compliance ((~~requires the use of full seismic forces~~)) with the seismic design provisions of the International Building Code is required, the criteria shall be in accordance with one of the following:

1. One-hundred percent of the values in the *International Building Code*. Where the existing seismic force-resisting system is a type that can be designated as "Ordinary," values of R, Ω_0 and C_d used for analysis in accordance with Chapter 16 of the *International Building Code* shall be those specified for structural systems classified as "Ordinary" in accordance with Table 12.2-1 of ASCE 7, unless it can be demonstrated that the structural system will provide performance equivalent to that of a "Detailed," "Intermediate" or "Special" system.
2. ASCE 41, using a Tier 3 procedure and the two-level performance objective in Table ((~~304.3.1~~)) 304.4.1 for the applicable *risk category*.

[BS] TABLE ((~~304.3.1~~)) 304.4.1
PERFORMANCE OBJECTIVES FOR USE IN ASCE 41 FOR COMPLIANCE WITH ((~~FULL~~)) INTERNATIONAL BUILDING CODE–LEVEL SEISMIC FORCES

RISK CATEGORY (Based on IBC Table 1604.5)	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-1N EARTHQUAKE HAZARD LEVEL	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-2N EARTHQUAKE HAZARD LEVEL
I	Life Safety (S-3)	Collapse Prevention (S-5)
II	Life Safety (S-3)	Collapse Prevention (S-5)
III	Damage Control (S-2)	Limited Safety (S-4)
IV	Immediate Occupancy (S-1)	Life Safety (S-3)

[BS] ((~~304.3.2~~)) 304.4.2 Compliance with reduced International Building Code seismic forces. Where seismic evaluation and design is permitted to use reduced seismic forces, the criteria used shall be in accordance with one of the following:

1. The *International Building Code* using 75 percent of the prescribed forces. Values of R, Ω_0 and C_d used for analysis shall be as specified in Section ((~~304.3.1~~)) 304.4.1 of this code.
2. Structures or portions of structures that comply with the requirements of the applicable chapter in Appendix A as specified in Items 2.1 through 2.4 and subject to the limitations of the respective Appendix A chapters shall be deemed to comply with this section.
   2.1. The seismic evaluation and design of unreinforced masonry bearing wall buildings in *Risk Category* I or II are permitted to be based on the procedures specified in Appendix Chapter A1.
   ((~~2.2. Seismic evaluation and design of the wall anchorage system in reinforced concrete and reinforced masonry wall buildings with flexible diaphragms in *Risk Category* I or II are permitted to be based on the procedures specified in Chapter A2.~~))
   ((~~2.3~~)) 2.2. Seismic evaluation and design of cripple walls and sill plate anchorage in residential buildings of light-frame wood construction in *Risk Category* I or II are permitted to be based on the procedures specified in Chapter A3.
   ((~~2.4~~)) 2.3. Seismic evaluation and design of soft, weak or open-front wall conditions in multiple-unit residential buildings of wood construction in *Risk Category* I or II are permitted to be based on the procedures specified in Chapter A4.
3. ASCE 41, using the performance objective in Table ((~~304.3.2~~)) 304.4.2 for the applicable *risk category*. Footnote a of Table 11.4.2 and Item 3 of Section 11.4.8 of ASCE 7 do not apply.

[BS] TABLE ((~~304.3.2~~)) 304.4.2
PERFORMANCE OBJECTIVES FOR USE IN ASCE 41 FOR COMPLIANCE WITH REDUCED SEISMIC FORCES

RISK CATEGORY (Based on IBC Table 1604.5)	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-1E EARTHQUAKE HAZARD LEVEL	STRUCTURAL PERFORMANCE LEVEL FOR USE WITH BSE-2E EARTHQUAKE HAZARD LEVEL
I	Life Safety (S-3). See Note a	Collapse Prevention (S-5)
II	Life Safety (S-3). See Note a	Collapse Prevention (S-5)
III	Damage Control (S-2). See Note a	Limited Safety (S-4). See Note b
IV	Immediate Occupancy (S-1)	Life Safety (S-3). See Note c

a. For Risk Categories I, II and III, the Tier 1 and Tier 2 procedures need not be considered for the BSE-1E earthquake hazard level.
b. For Risk Category III, the Tier 1 screening checklists shall be based on the Collapse Prevention, except that checklist statements using the Quick Check provisions shall be based on *MS*-factors that are the average of the values for Collapse Prevention and Life Safety.
c. For Risk Category IV, the Tier 1 screening checklists shall be based on Collapse Prevention, except that checklist statements using the Quick Check provisions shall be based on *MS*-factors for Life Safety.

[S] 304.5 Seismic regulations for unreinforced masonry buildings. *URM buildings* meeting any of the following criteria shall comply with Section 304.5.1:

1. Where there is a significant increase in the occupant load of a *URM building*, as determined by the code official.
2. *URM buildings* voluntarily seeking to be defined as a *retrofitted URM building*.

304.5.1 URM Seismic regulations. *URM buildings* shall comply or be altered to comply with one of the following:

1. Section 304.4.2;
2. Appendix Chapter A6, Alternate Method for the Seismic Improvement of *Unreinforced Masonry (URM) Buildings*;
3. Previously permitted and completed retrofits that comply with one of the following:
   a. *URM buildings* that have undergone a seismic retrofit due to a substantial alteration determination, permitted between September 16, 1996, and April 24, 2009, using the 1994 or later edition of the Seattle Building Code. A report confirming the retrofit work was completed shall be prepared by a licensed structural engineer and submitted to the code official.
   b. *URM buildings* that have undergone a seismic retrofit due to a substantial alteration determination, permitted after April 24, 2009, using the 2006 or later edition of the Seattle Building Code.
   c. Other seismic retrofits approved by the code official.

SECTION 305
IN-SITU LOAD TESTS

[BS] 305.1 General. Where used, in-situ load tests shall be conducted in accordance with Section 1708 of the *International Building Code*.

SECTION 306
ACCESSIBILITY FOR EXISTING BUILDINGS

[S] 306.1 Scope. The provisions of Sections 306.1 through 306.7.16 apply to maintenance and *repair*, *change of occupancy*, *additions* and *alterations* to *existing buildings*, including those identified as ((~~*historic buildings*~~)) *landmarks*.

306.2 Design. Buildings and *facilities* shall be designed and constructed to be accessible in accordance with this code and the *alteration* and *existing building* provisions in ICC A117.1, as applicable.

306.3 Maintenance and repair. A *facility* that is constructed or altered to be accessible shall be maintained accessible during occupancy. Required accessible means of egress shall be maintained during construction, demolition, remodeling or *alterations* and *additions* to any occupied building.

Exception: Existing means of egress need not be maintained where *approved* temporary means of egress and accessible means of egress systems and *facilities* are provided.

306.3.1 Prohibited reduction in accessibility. An *alteration* that decreases or has the effect of decreasing accessibility of a building, *facility* or element, thereof, below the requirements for new construction at the time of the *alteration* is prohibited. The number of accessible elements need not exceed that required for new construction at the time of *alteration*.

[S] 306.4 Extent of application. ((~~An~~)) Maintenance, *alterations*, *change of occupancy*, *additions* to or relocations of *existing buildings* of an existing *facility* shall not impose a requirement for greater accessibility than that which would be required for new construction.

[S] 306.5 Change of occupancy. *Existing buildings* that undergo a change of group or occupancy shall comply with Section 306.7.

Exception: Type B dwelling or sleeping units required by Section 1108 of the *International Building Code* are not required to be provided in *existing buildings* and *facilities* undergoing a *change of occupancy* in conjunction with *alterations* where the *work area* is 50 percent or less of the aggregate area of the building or less than a level 3 *alteration*.

[W] 306.6 Additions. Provisions for new construction shall apply to *additions*. An *addition* that affects the accessibility to, or contains an area of, a *primary function* shall comply with the requirements in Section 306.7.1. Limited-use/limited-application elevators installed in accordance with ASME A17.1 shall be permitted as a component of an accessible route connecting the existing construction to the addition.

306.7 Alterations. A *facility* that is altered shall comply with the applicable provisions in Chapter 11 of the *International Building Code,* ICC A117.1 and the provisions of Sections 306.7.1 through 306.7.16, unless *technically infeasible*. Where compliance with this section is *technically infeasible*, the *alteration* shall provide access to the maximum extent technically feasible.

[W] 306.7.1 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~~)) Toilet facilities and drinking fountains serving the area of *primary function* ((~~area shall include toilet *facilities* and drinking fountains serving~~)) including the route from the area of *primary function* to these facilities, shall be accessible. Priority shall be given to the improvements affecting the accessible route to the *primary function* area.

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 a *facility*.
5. This provision does not apply to altered areas limited to Type B dwelling and sleeping units.

306.7.2 Accessible means of egress. Accessible means of egress required by Chapter 10 of the *International Building Code* are not required to be added in existing *facilities*.

306.7.3 Alteration of Type A units. The *alteration* to Type A individually owned dwelling units within a Group R-2 occupancy shall be permitted to meet the provision for a Type B dwelling unit.

306.7.4 Type B units. Type B dwelling or sleeping units required by Section 1108 of the International Building Code are not required to be provided in *existing buildings* and *facilities* undergoing *alterations* where the *work area* is 50 percent or less of the aggregate area of the building.

306.7.5 Entrances. Where an *alteration* includes *alterations* to an entrance that is not accessible, and the *facility* has an accessible entrance, the altered entrance is not required to be accessible unless required by Section 306.7.1. Signs complying with Section 1112 of the *International Building Code* shall be provided.

306.7.6 Accessible route. Exterior accessible routes, including curb ramps, shall be not less than 36 inches (914 mm) minimum in width.

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

[W] 306.7.8 Platform lifts. ((~~Platform~~)) Vertical and inclined 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.

Limited-use/limited-application elevators installed in accordance with ASME A17.1 shall be permitted as a component of an accessible route.

[S] 306.7.9 Stairways and escalators in existing buildings. ((~~Where~~)) In *alterations*, *change of occupancy*, or *additions* where an escalator or stairway is added where none existed previously and major structural modifications are necessary for installation, an accessible route complying with Section 1104.4 of the *International Building Code* is required between levels served by such escalator or stairway.

306.7.10 Determination of number of units. Where Chapter 11 of the *International Building Code* requires Accessible, Type A or Type B units and where such units are being altered or added, the number of Accessible, Type A and Type B units shall be determined in accordance with Sections 306.7.10.1 through 306.7.10.3.

306.7.10.1 Accessible dwelling or sleeping units. Where Group I-1, I-2, I-3, R-1, R-2 or R-4 dwelling or sleeping units are being altered or added, the requirements of Section 1108 of the *International Building Code* for Accessible units apply only to the quantity of spaces being altered or added.

[S] 306.7.10.2 Type A dwelling or sleeping units. Where more than 20 Group R-2 dwelling or sleeping units are being altered or added, the requirements of Section 1108 of the *International Building Code* for Type A units and Chapter 9 of the International Building Code for visible alarms apply only to the quantity of the spaces being altered or added.

[S] 306.7.10.3 Type B dwelling or sleeping units. Where four or more Group I-1, I-2, R-1, R-2, or R-3 ((~~or R-4~~)) dwelling or sleeping units are being added, the requirements of Section 1108 of the *International Building Code* for Type B units and Chapter 9 of the *International Building Code* for visible alarms apply only to the quantity of the spaces being added. Where Group I-1, I-2, R-1, R-2, or R-3 ((~~or R-4~~)) dwelling or sleeping units are being altered and where the *work area* is greater than 50 percent of the aggregate area of the building, the requirements of Section 1108 of the *International Building Code* ((~~for Type B units~~)) apply only to the quantity of the spaces being altered.

Exception: When using the provisions of Chapter 9, Group I-1, I-2, R-2, or R-3 dwelling or sleeping units where the first *certificate of occupancy* was issued before March 15, 1991, are not required to provide Type B dwelling or sleeping units.

[S] 306.7.11 Toilet rooms. Where it is *technically infeasible* to alter existing toilet rooms to be accessible, one accessible single-user toilet room or one accessible family or assisted-use toilet room constructed in accordance with Section 1110.2.1 of the *International Building Code* is permitted. This toilet room shall be located on the same floor and in the same area as the existing toilet rooms. The number of toilet facilities and water closets required by the *International Building Code* is permitted to be reduced by one, in order to provide accessible features. At the inaccessible toilet rooms, provide directional signs indicating the location of the nearest such toilet room. ((~~shall be provided.~~)) These directional signs shall include the International Symbol of Accessibility, and sign characters shall meet the visual character requirements in accordance with ICC A117.1.

306.7.12 Bathing rooms. Where it is *technically infeasible* to alter existing bathing rooms to be accessible, one accessible single-user bathing room or one accessible family or assisted-use bathing room constructed in accordance with Section 1110.2.1 of the *International Building Code* is permitted. This accessible bathing room shall be located on the same floor and in the same area as the existing bathing rooms. At the inaccessible bathing rooms, directional signs indicating the location of the nearest such bathing room shall be provided. These directional signs shall include the International Symbol of Accessibility, and sign characters shall meet the visual character requirements in accordance with ICC A117.1.

306.7.13 Additional toilet and bathing facilities. In assembly and mercantile occupancies, where additional toilet fixtures are added, not fewer than one accessible family or assisted-use toilet room shall be provided where required by Section 1110.2.1 of the *International Building Code*. In recreational *facilities*, where additional bathing rooms are being added, not fewer than one family or assisted-use bathing room shall be provided where required by Section 1110.2.1 of the *International Building Code*.

306.7.14 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.

306.7.15 Amusement rides. Where the structural or operational characteristics of an amusement ride are altered to the extent that the amusement ride's performance differs from that specified by the manufacturer or the original design, the amusement ride shall comply with requirements for new construction in Section 1111.4.8 of the *International Building Code.*

[S] 306.7.16 ((~~Historic~~)) Accessibility provisions for landmark structures. Where compliance with the requirements for accessible routes, entrances or toilet rooms would threaten or destroy the historic significance of the ((~~historic~~)) *landmark* structure, as determined by the ((~~authority having jurisdiction~~)) *code official*, the alternative requirements of Sections 306.7.16.1 through 306.7.16.5 for that element shall be permitted.

Exceptions:

1. Accessible means of egress required by Chapter 10 of the *International Building Code* are not required to be provided in ((~~historic~~)) *landmark* structures.
2. The altered element or space is not required to be on an accessible route, unless required by Sections 306.7.16.1 or 306.7.16.2.

306.7.16.1 Site arrival points. Not fewer than one exterior accessible route, including curb ramps from a site arrival point to an accessible entrance, shall be provided and shall not be less than 36 inches (914 mm) minimum in width.

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

306.7.16.3 Entrances. Where an entrance cannot be made accessible in accordance with Section 306.7.5, an accessible entrance that is unlocked while the building is occupied shall be provided; or, a locked accessible entrance with a notification system or remote monitoring shall be provided.

Signs complying with Section 1112 of the *International Building Code* shall be provided at the public entrances and the accessible entrance.

306.7.16.4 Toilet facilities. Where toilet rooms are provided, not fewer than one accessible single-user toilet room or one accessible family or assisted-use toilet room complying with Section 1110.2.1 of the *International Building Code* shall be provided.

306.7.16.5 Bathing facilities. Where bathing rooms are provided, not fewer than one accessible single-user bathing room or one accessible family or assisted-use bathing rooms complying with Section 1110.2.1 of the *International Building Code* shall be provided.

306.7.16.6 Type A units. The *alteration* to Type A individually owned dwelling units within a Group R-2 occupancy shall be permitted to meet the provision for a Type B dwelling unit.

[S] 306.7.16.7 Type B units. Type B dwelling or sleeping units required by Section 1108 of the *International Building Code* are not required to be provided in ((~~*historic buildings*~~)) *landmarks*.

** SECTION 307
SMOKE ALARMS

[S] 307.1 Smoke alarms. Where an *alteration*, *addition*, *change of occupancy* or relocation of a building is made to an *existing building* or structure of a Group R and I-1 occupancy, the *existing building* shall be provided with smoke alarms in accordance with the *International Fire Code*. ((~~or Section R314 of the *International Residential Code*.~~))

Exception: Work classified as Level 1 *Alterations* in accordance with Chapter 7.

** SECTION 308
CARBON MONOXIDE DETECTION

308.1 Carbon monoxide detection. Where an *addition*, *alteration*, *change of occupancy* or relocation of a building is made to Group I-1, I-2, I-4 and R occupancies and classrooms of Group E occupancies, the *existing building* shall be provided with carbon monoxide detection in accordance with the *International Fire Code* or Section R315 of the *International Residential Code*.

Exceptions:

1. Work involving the exterior surfaces of buildings, such as the replacement of roofing or siding, the addition or replacement of windows or doors, or the addition of porches or decks.
2. Installation, alteration or *repairs* of plumbing or mechanical systems, other than fuel-burning appliances.
3. Work classified as Level 1 *Alterations* in accordance with Chapter 7.

SECTION 309
ADDITIONS AND REPLACEMENTS OF EXTERIOR WALL COVERINGS AND EXTERIOR WALL ENVELOPES

309.1 General. The provisions of Section 309 apply to all *alterations*, *repairs*, *additions*, relocations of structures and *changes of occupancy* regardless of compliance method.

309.2 Additions and replacements. Where an *exterior wall covering* or *exterior wall envelope* is added or replaced, the materials and methods used shall comply with the requirements for new construction in Chapter 14 and Chapter 26 of the *International Building Code* if the added or replaced *exterior wall covering* or *exterior wall envelope* involves two or more contiguous stories and comprises more than 15 percent of the total wall area on any side of the building.

[S] SECTION 310
LANDMARKS

[B] 310.1 Landmarks. The provisions of this code relating to the construction, *repair*, *alteration*, *addition*, restoration and movement of structures, and *change of occupancy* shall be mandatory for landmarks. Landmarks shall comply with the accessibility requirements of Section 306.7.16.

Exception: Where *approved* by the *code official*, compliance with this code is not required where preservation of historic elements precludes complete compliance and a reasonable degree of safety to the public and the occupants of the building is provided.

[S] SECTION 311
SUBSTANTIAL ALTERATION REQUIREMENTS FOR ALL COMPLIANCE METHODS

[S] 311.1 Substantial alterations or repairs. Regardless of which compliance method is used, a building or structure to which *substantial alterations* or *repairs* are made shall conform with the requirements of this section and the following sections of the *International Building Code*:

1. Section 403 when applicable;
2. Special requirements for the Fire District found in Chapter 4 when applicable;
3. Section 717;
4. Chapter 8;
5. Section 903 and 905;
6. Sections 909.20.5, 909.20.6 and 909.21; and
7. Chapter 10.
8. Fire alarms shall be provided as required by the *International Fire Code*.

[S] 311.1.1 Definition. For the purpose of this section, *substantial alteration* or repair means any one of the following, as determined by the *code official*:

1. *Repair* of a building with a *damage ratio* of 60 percent or more.
2. Remodeling or an *addition* that substantially extends the useful physical or economic life of the building or a significant portion of the building, other than typical tenant remodeling.
3. A change of a significant portion of a building to an occupancy that is more hazardous than the existing occupancy, based on the combined life and fire risk as determined by the *code official*. The *code official* is permitted to use Table 311.1 as a guideline.
4. Reoccupancy of a building that has been substantially vacant for more than 24 months in occupancies other than Group R-3.

[S] 311.1.2 Seismic regulations. Buildings or structures to which *substantial alterations* or *repairs* are made shall comply with Section 304.4.2. In addition, the *code official* is authorized to require testing of existing materials when there is insufficient evidence of structural strength or integrity.

Exceptions:

1. If an *alteration* is substantial only because it is a change to a more hazardous occupancy, compliance with this subsection is required only if the life hazard risk increases, as determined by the *code official*.
2. For Group R-3 occupancies, when approved by the *code official*, the applicant is permitted to evaluate and strengthen portions of the building lateral support structure, such as foundations and cripple walls.
3. For permitted one- or two- family dwellings, less than four stories above grade plane, that are *substantial alterations* due to a move into the SBC, the applicant is permitted to evaluate and strengthen portions of the building lateral support structure, such as foundations and cripple walls, subject to the approval of the *code official*.

[S] 311.1.3 Seismic evaluation report. A proposal for structural rehabilitation shall be submitted based on a comprehensive report prepared by a licensed structural engineer according to rules promulgated by the *code official*. The report shall include an investigation and structural analysis of the building based on Section 304.4.2. The report shall specify the building's seismic deficiencies, and propose measures that will provide an acceptable degree of seismic safety considering the nature, size and scope of the project. This requirement shall also apply to Section 101.14 as conditions require.

A seismic evaluation report is not required when Exceptions 2 or 3 of Section 311.1.2 are met.

[S] 311.1.4 Energy use regulations. An *alteration* or *repair* described in Items 1, 2, or 4 of Section 311.1.1 shall comply with Section C503.8 of the *International Energy Conservation Code*.

Exception: Existing residential buildings of three stories or less above grade plane are not required to comply with this section.

[S] TABLE 311.1
RATING OF OCCUPANCIES BY DEGREE OF HAZARD

OCCUPANCY	DESCRIPTION	LIFE	FIRE	COMBINED RATING
A1	Assembly uses, usually with fixed seating, intended for the production and viewing of the performing arts or motion pictures	4	3	12
A2	Assembly uses intended for food and/or drink consumption	4	3	12
A3	Assembly uses intended for worship, recreation or amusement and other assembly uses not classified elsewhere in Group A	4	3	12
A4	Assembly uses intended for viewing of indoor sporting events and activities with spectator seating	3	1	3
A5	Assembly uses intended for participation in or viewing outdoor activities	3	1	3
B	Office, professional or service-type transactions, including storage of records and accounts	2	1	2
B	Eating & drinking establishments with an occupant load of less than 50	2	1	2
B	Buildings or portions of buildings having rooms used for educational purposes beyond 12th grade	2	1	2
E	Any building used for educational purposes by six or more persons at any one time for educational purposes through the 12th grade	3	2	6
E	Day care centers for more than five children older than 2-1/2 years of age	3	2	6
I4	Facilities that provide accommodations for less than 24 hours for more than five unrelated adults and provides supervision and personal care services; facilities that provide supervision and personal care on less than a 24-hour basis for more than five children 2-1/2 years of age or less	4	3	12
F1	Moderate hazard factory and industrial	2	2	4
F2	Low-hazard factory and industrial	1	1	1
H1	Occupancies with a detonation hazard	5	4	20
H2	Occupancies which present a deflagration hazard or a hazard from accelerated burning	5	4	20
H3	Occupancies containing materials that readily support combustion or that pose a physical hazard	5	4	20
H4	Occupancies containing materials that are health hazards	5	4	20
H5	Semiconductor fabrication facilities	5	4	20
I1	Buildings, structures or portions thereof for more than 16 persons, excluding staff, who reside on a 24-hour basis in a supervised environment and receive custodial care	3	3	9
I2	Buildings and structures used for medical care on a 24-hour basis for more than five persons who are incapable of self-preservation	4	3	12
I3	Buildings and structures that are inhabited by more than five persons who are under restraint or security	4	3	12
M	Buildings used for display and sale of merchandise	3	2	6
R1	Occupancies containing sleeping units where the occupants are primarily transient in nature	3	3	9
R2	Occupancies containing sleeping units or more than two dwelling units where the occupants are primarily permanent in nature	3	3	9
R3	Residential 3 occupancies where the occupants are primarily permanent in nature and not classified as Group R-1, R-2, or I	2	1	2
S1	Moderate hazard storage	2	2	4
S2	Low-hazard storage	1	1	1
U	Buildings and structures of an accessory character and miscellaneous structures	1	1	1

[S] SECTION 312 REROOFING **

[BS] 312.1 General. Materials and methods of application used for recovering or replacing an existing roof covering shall comply with the requirements of Chapter 15 of the *International Building Code* and the *International Energy Conservation Code*. **

Exceptions:

1. *Roof replacement* or roof recover of existing low-slope roof coverings shall not be required to meet the minimum design slope requirement of one-quarter unit vertical in 12 units horizontal (2-percent slope) in Section 1507 of the *International Building Code* for roofs that provide positive roof drainage.
2. Recovering or replacing an existing roof covering shall not be required to meet the requirement for secondary (emergency overflow) drains or scuppers in Section 1502 of the *International Building Code* for roofs that provide for positive roof drainage. For the purposes of this exception, existing secondary drainage or scupper systems required in accordance with this code shall not be removed unless they are replaced by secondary drains or scuppers designed and installed in accordance with Section 1502 of the *International Building Code*.

[BS] 312.2 Structural and construction loads. ((~~Structural roof components shall be capable of supporting the roof-covering system and the material and equipment loads that will be encountered during installation of the system.~~)) Where addition or replacement of roofing or replacement of equipment results in additional dead loads, structural components supporting the reroofing equipment shall comply with Section 304.1. **

[BS] 312.3 Roof replacement. *Roof replacement* shall include the removal of all existing layers of roof coverings down to the roof deck. **

Exception: Where the existing roof assembly includes an ice barrier membrane that is adhered to the roof deck, the existing ice barrier membrane shall be permitted to remain in place and covered with an additional layer of ice barrier membrane in accordance with Section 1507 of the *International Building Code*.

[BS] 312.3.1 Roof recover. The installation of a new roof covering over an existing roof covering shall be permitted where any of the following conditions occur:

1. The new roof covering is installed in accordance with the roof covering manufacturer's *approved* instructions.
2. Complete and separate roofing systems, such as standing-seam metal roof panel systems, that are designed to transmit the roof loads directly to the building's structural system and that do not rely on existing roofs and roof coverings for support, are installed.
3. Metal panel, metal shingle and concrete and clay tile roof coverings are installed over existing wood shake roofs in accordance with Section 312.4.
4. A new protective *roof coating* is applied over an existing protective *roof coating*, a metal roof panel, metal roof shingles, mineral-surfaced roll roofing, a built-up roof, modified bitumen roofing, thermoset and thermoplastic single-ply roofing or a spray polyurethane foam roofing system.

[BS] 312.3.1.1 Exceptions. A roof recover shall not be permitted where any of the following conditions occur:

1. The existing roof or roof covering is water soaked or has deteriorated to the point that the existing roof or roof covering is not adequate as a base for additional roofing.
2. The existing roof covering is slate, clay, cement or asbestos-cement tile.
3. The existing roof has two or more applications of any type of roof covering.

[BS] 312.4 Roof recovering. Where the application of a new roof covering over wood shingle or shake roofs creates a combustible concealed space, the entire existing surface shall be covered with gypsum board, mineral fiber, glass fiber or other *approved* materials securely fastened in place. **

[BS] 312.5 Reinstallation of materials. Existing slate, clay or cement tile shall be permitted for reinstallation, except that damaged, cracked or broken slate or tile shall not be reinstalled. Existing vent flashing, metal edgings, drain outlets, collars and metal counterflashings shall not be reinstalled where rusted, damaged or deteriorated. Aggregate surfacing materials shall not be reinstalled. **

[BS] 312.6 Flashings. Flashings shall be reconstructed in accordance with *approved* manufacturer's installation instructions. Metal flashing to which bituminous materials are to be adhered shall be primed prior to installation. **

[S] SECTION 313 RELOCATED BUILDINGS AND STRUCTURES

313.1 Nonresidential buildings or structures. Nonresidential buildings or structures relocated into or within the city shall comply with standards adopted by the *code official*. The *code official* is authorized to require an inspection of the building before or after relocation. The permit holder shall correct all deficiencies identified by the inspection. The *code official* is

authorized to require that a bond or cash deposit in an amount sufficient to abate or demolish the building be posted prior to issuance of a permit. See Section 106 of the *International Building Code* for information required on plans. Any relocated building that is not in complete compliance with standards for relocated buildings within 18 months from the date of permit issuance and is found to be a public nuisance may be abated. Relocated buildings and structures shall also comply with the *International Energy Conservation Code*.

313.2 Residential buildings or structures. Residential buildings or structures relocated into or within the city are not required to comply with all of the requirements of this code if the original occupancy classification of the building or structure is not changed. Compliance with all of the requirements of this chapter will be required if the relocated residential buildings or structures undergo substantial alteration. Work performed on new and existing foundations shall comply with all of the requirements of this code for new construction.

[S] SECTION 314
FLOOD HAZARD AREAS

[BS] 314.1 Flood hazard areas. Buildings and structures in flood hazard areas established in Section 1612.3 of the *International Building Code* shall comply with Sections 314.1.1 through 314.1.3.

((~~In *flood hazard areas, alterations* that~~)) When any combination of *repairs*, *alterations*, or *additions* constitute *substantial improvement*, ((~~shall require that~~)) the *existing building* and all *repairs*, *alterations*, and *additions* shall comply with Section 1612 of the *International Building Code*. ((~~, or Section R322 of the *International Residential Code*, as applicable.~~))

314.1.1 Repairs. Any *repair* that constitutes *substantial improvement* of the existing structure or buildings that have been substantially damaged, as defined in Section 202, 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 according to Section 1612 of the *International Building Code*.

Any *repairs* that do not constitute *substantial improvement* or *repair* of *substantial damage* of the existing structure, as defined in Section 202, are not required to comply with the flood design requirements for new construction according to Section 1612 of the *International Building Code*.

Exception: For a new foundation or replacement foundation, the foundation shall comply with Section 1612 of the *International Building Code*.

314.1.2 Alterations. *Alterations* that constitute *substantial improvement* of the existing structure 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 according to Section 1612 of the *International Building Code*.

Any alterations that do not constitute *substantial improvement* of the existing structure are not required to comply with the flood design requirements for new construction according to Section 1612 of the *International Building Code*.

Exception: For a new foundation or replacement foundation, the foundation shall comply with Section 1612 of the International Building Code.

314.1.3 Additions. *Additions* shall comply with the flood design requirements for new construction according to Section 1612 of the *International Building Code*. If the *addition* constitutes *substantial improvement*, the existing structure shall be brought into compliance with the requirements for new construction for flood design according to Section 1612 of the *International Building Code*.

CHAPTER 4
REPAIRS

User note:

About this chapter: *Chapter 4 provides requirements for repairs of existing buildings. The provisions define conditions under which repairs may be made using materials and methods like those of the original construction or the extent to which repairs must comply with requirements for new buildings.*

SECTION 401
GENERAL

[S] 401.1 Scope. ((~~*Repairs* shall comply with the requirements of this chapter. *Repairs* to *historic buildings* need only comply with Chapter 12.~~)) Damaged buildings and structures, and parts thereof, shall be *repaired* in compliance with this chapter. Work on undamaged parts of a building or structure that is necessary for the required *repair* of damaged parts shall be considered part of the *repair* and shall not be subject to the requirements for *alterations* except as specifically required in this chapter. Routine maintenance, ordinary *repairs* exempt from permit in accordance with *International Building Code* Section 106.2, and abatement of wear due to normal service conditions shall not be subject to the requirements for repairs in this section.

401.1.1 Bleachers, grandstands and folding and telescopic seating. *Repairs* to existing bleachers, grandstands and folding and telescopic seating shall comply with ICC 300.

[S] 401.1.2 Determining repair levels. *Repairs* shall be classified as *repair* of minor damage, *repair* of moderate damage, *repair* of significant damage, or repair of extensive damage. Required *repair* levels shall be based on the *damage ratio* as defined in Section 202. *Damage ratios* shall be determined according to rules promulgated by the Director.

[S] 401.1.3 Requirements for repair of minor damage. *Repair* of buildings with *damage ratios* less than 10 percent shall comply with this Section 401.1.3. Repair of unreinforced masonry chimneys shall comply with Section 302.9.

1. Damage to structural elements and fire/life safety systems shall be repaired.
2. New or replaced elements shall comply with current code requirements.

   Exception: Like materials shall be permitted for nonstructural alterations, provided no hazard to life, health or property is created, and the materials do not adversely affect any structural member or result in a change to the fire-resistance rating of any part of the building or structure.
3. New or replaced structural elements shall be tied into new or existing structure in accordance with the structural engineer's recommendations and accepted practice.
4. All structural *repairs* shall be designed and approved by a structural engineer licensed in the State of Washington.
5. Cracked concrete and masonry shall be repaired if repair is required by FEMA 306, 307 and 308.
6. Strengthening of the entire building or structure is not required.
7. Fire protection and life safety systems required when the building was built or altered shall be repaired in accordance with Section 101.5.
8. No portion of the building shall be repaired in such a manner that the building becomes less safe than it was before the damage occurred, nor shall the repair create an unsafe condition as defined in Section 101.14.

[S] 401.1.4 Requirements for repair of moderate damage. *Repair* of buildings with *damage ratios* of at least 10 percent and less than 30 percent shall comply with Section 401.1.3 and this Section 401.1.4. All structures supporting and supported by the damaged portions of the building shall be repaired in accordance with items 1 through 6 below.

1. The capacity of existing structural elements supporting and supported by the damaged portion of the building shall not be less than the capacity of those elements before the damage occurred.
2. The lateral loading to existing elements of the lateral force resisting systems shall not be increased beyond their capacity.
3. New work shall not introduce new irregularities, and shall not worsen existing irregularities.
4. New structural elements shall be detailed and connected to the existing structural elements as required by this code.
5. New or relocated nonstructural elements shall be detailed and connected to existing or new structural elements as required by this code.
6. The *alterations* shall not create an *unsafe* condition.

[S] 401.1.5 Requirements for repair of significant damage. *Repair* of buildings with *damage ratios* of at least 30 percent and less than 50 percent shall comply with Sections 401.1.3 and 401.1.4 and this Section 401.1.5.

1. The engineer shall submit a report identifying structural damage, and falling hazards to exitways, pedestrian walkways and public rights-of-way. The report shall also contain a statement acknowledging that compliance with this section may not satisfy the requirements for *substantial alteration* of Section 311.
2. All identified falling hazards in exits and exit discharges shall be mitigated so as to limit damage at primary means of egress.
3. The walls, roofs and floors of unreinforced masonry buildings shall comply with the sections of ASCE 41 or Appendix A1 as shown in Table 401.1. Seismic forces shall comply with reduced International Building Code forces per Section 304.4.2.

   Exception: If the tested mortar strength is less than the minimums indicated in Table 401.1, Item a, the structure shall comply with all requirements of Section 304.4.2.
4. Repair of damage for buildings subject to this Section 401.1.5 will be considered when determining whether Section 311 provisions for *substantial alterations* apply.

[S] 401.1.6 Requirements for repair of extensive damage. *Repair* of buildings with *damage ratios* of at least 50 percent and less than 60 percent shall comply with Sections 401.1.3 through 401.1.5 and this Section 401.1.6.

1. The structure shall be *repaired* and designed to satisfy the requirements of ASCE 41 and the performance criteria in Table 304.4.2.
2. A seismic evaluation report shall be submitted. The report shall comply with rules promulgated by the *code official*, and the following requirements:
   - 2.1. The report shall be prepared by a structural engineer registered in the state of Washington.
   - 2.2. The report shall be based on ASCE 41 and the performance criteria in Table 304.4.2.

     Exception: Unreinforced masonry buildings are permitted to comply with Appendix A1. The reduction of Section 401.1.5 Item 3 is not allowed.
   - 2.3. At a minimum, the report shall contain the information listed below. A previously written report may be submitted if it satisfies the requirements of this section.
     - 2.3.1. An overall description of the building, including size (number of stories and basements, approximate floor area) and the occupancies or uses in the building.
     - 2.3.2. Identification of building deficiencies.

[S] 401.1.7 Requirements for repair of more than extensive damage. Repair of buildings with damage ratios of 60% or more shall comply with Section 311.

[S] TABLE 401.1
REQUIREMENTS FOR UNREINFORCED MASONRY BUILDINGS

COMPONENT	ASCE 41 SECTION	APPENDIX A SECTION
a. Masonry strength (mortar and anchor tests) for anchorage to masonry and for wall bracing	16.2.2.2	A106.2.3
b. Diaphragm shear transfer	16.2.3.2.6	A111.5
c. Out-of-plane transfer	16.2.4.3	A113.1
d. Wall bracing	16.2.4.2	A113.5

[W] 401.2 Compliance. The work shall not make the building less complying than it was before the *repair* was undertaken. Work on nondamaged components that is necessary for the required repair of damaged components shall be considered part of the repair and shall not be subject to requirements for alterations.

[S][BS] 401.3 Flood hazard areas. In flood hazard areas, *repairs* that constitute a *substantial improvement* of the existing structure or buildings that have been *substantially damaged* shall ((~~require that the building~~)) comply with ((~~Section 1612 of the *International Building Code*, or Section R322 of the *International Residential Code*, as applicable~~)) the requirements for repairs in Section 314 of this code.

[W] 401.4 Demolition and replacement. Where a building or structure is effectively demolished by damage or where the intended method of repair is demolition and replacement, the replaced building, including its replaced foundation, shall comply with requirements for new construction in the *International Building Code*.

Exception: Existing foundations are permitted to remain and be reused where approved by the *code official*.

SECTION 402
BUILDING ELEMENTS AND MATERIALS

402.1 Glazing in hazardous locations. Replacement glazing in hazardous locations shall comply with the safety glazing requirements of the *International Building Code* or *International Residential Code* as applicable.

Exception: Glass block walls, louvered windows and jalousies repaired with like materials.

SECTION 403
FIRE PROTECTION

403.1 General. *Repairs* shall be done in a manner that maintains the level of fire protection provided.

SECTION 404
MEANS OF EGRESS

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

SECTION 405
STRUCTURAL

[S][BS] 405.1 General. Structural *repairs* shall be in compliance with ((~~this section and~~)) Section ((~~401.2~~)) 304.

[W][S] 405.1.1 Structural concrete repairs. Repair of structural concrete is permitted to comply with ACI 562 Section 1.7, except where the damage is more than moderate.

[S] ((~~[BS] 405.2 Repairs to damaged buildings.~~ ~~*Repairs* to damaged buildings shall comply with this section.~~

~~**[BS] 405.2.1 Repairs for less than substantial structural damage.** Unless otherwise required by this section, for damage less than *substantial structural damage*, the damaged elements shall be permitted to be restored to their predamage condition.~~

~~**[BS] 405.2.1.1 Snow damage.** Structural components whose damage was caused by or related to snow load effects shall be repaired, replaced or altered to satisfy the requirements of Section 1608 of the *International Building Code*.~~

~~**[BS] 405.2.2 Disproportionate earthquake damage.** A building assigned to Seismic Design Category D, E or F that has sustained *disproportionate earthquake damage* shall be subject to the requirements for buildings with substantial structural damage to vertical elements of the lateral force-resisting system.~~

~~**[BS] 405.2.3 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 in accordance with Section 405.2.3.1, and either repaired in accordance with Section 405.2.3.2 or repaired and retrofitted in accordance with Section 405.2.3.3, depending on the results of the evaluation.~~

~~**Exceptions:**~~

1. ~~Buildings assigned to Seismic Design Category A, B or C whose *substantial structural damage* was not caused by earthquake need not be evaluated or retrofitted for load combinations that include earthquake effects.~~
2. ~~One- and two-family dwellings need not be evaluated or retrofitted for load combinations that include earthquake effects.~~

~~**[BS] 405.2.3.1 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 predamage state, would comply with the provisions of the *International Building Code* for load combinations that include wind or earthquake effects, except that the seismic forces shall be the reduced seismic forces.~~

~~**[BS] 405.2.3.2 Extent of repair for compliant buildings.** If the evaluation establishes that the building in its predamage condition complies with the provisions of Section 405.2.3.1, then the damaged elements shall be permitted to be restored to their predamage condition.~~

~~**[BS] 405.2.3.3 Extent of repair for noncompliant buildings.** If the evaluation does not establish that the building in its predamage condition complies with the provisions of Section 405.2.3.1, then the building shall be retrofitted to comply with the provisions of this section. The wind loads for the *repair* and *retrofit* shall be those required by the building code in effect at the time of original construction, unless the damage was caused by wind, in which case the wind loads shall be in accordance with the *International Building Code*. The seismic loads for this *retrofit* design shall be those required by the building code in effect at the time of original construction, but not less than the reduced seismic forces.~~

[BS] 405.2.4 Substantial structural damage to gravity load-carrying components. Gravity load-carrying components that have sustained *substantial structural damage* shall be rehabilitated to comply with the applicable provisions for dead, live and snow loads in the *International Building Code*. Undamaged gravity load-carrying components that receive dead, live or snow loads from rehabilitated components shall also be rehabilitated if required to comply with the design loads of the *rehabilitation* design.

[BS] 405.2.4.1 Lateral force-resisting elements. Regardless of the level of damage to vertical elements of the lateral force-resisting system, if *substantial structural damage* to gravity load-carrying components was caused primarily by wind or seismic effects, then the building shall be evaluated in accordance with Section 405.2.3.1 and, if noncompliant, retrofitted in accordance with Section 405.2.3.3.

Exceptions:

1. Buildings assigned to Seismic Design Category A, B or C whose *substantial structural damage* was not caused by earthquake need not be evaluated or retrofitted for load combinations that include earthquake effects.
2. One- and two-family dwellings need not be evaluated or retrofitted for load combinations that include earthquake effects.

[BS] 405.2.5 Substantial structural damage to snow load-carrying components. Where substantial structural damage to any snow load-carrying components is caused by or related to snow load effects, any components required to carry snow loads on roof framing of similar construction shall be repaired, replaced or retrofitted to satisfy the requirements of Section 1608 of the *International Building Code*.

[BS] 405.2.6 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*, or Section R322 of the *International Residential Code*, as applicable.))

[S] ((SECTION 406 ELECTRICAL

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

406.1.1 Receptacles. Replacement of electrical receptacles shall comply with the applicable requirements of Section 406.4(D) of NFPA 70.

406.1.2 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.

406.1.3 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.

406.1.4 Health care facilities. Portions of electrical systems being repaired in Group I-2, ambulatory care *facilities* and outpatient clinics shall comply with NFPA 99 requirements for *repairs*.

406.1.5 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.))

[S] ((SECTION 407 MECHANICAL

407.1 General. Existing mechanical systems undergoing *repair* shall not make the building less complying than it was before the damaged occurred.

407.2 Mechanical draft systems for manually fired appliances and fireplaces. A mechanical draft system shall be permitted to be used with manually fired appliances and fireplaces where such a system complies with all of the following requirements:

1. The mechanical draft device shall be listed and installed in accordance with the manufacturer's installation instructions.

2. A device shall be installed that produces visible and audible warning upon failure of the mechanical draft device or loss of electrical power at any time that the mechanical draft device is turned on. This device shall be equipped with a battery backup if it receives power from the building wiring.
3. A smoke detector shall be installed in the room with the appliance or fireplace. This device shall be equipped with a battery backup if it receives power from the building wiring.))

[S] ((~~SECTION 408~~ ~~PLUMBING~~

~~**408.1 Materials.** Plumbing materials and supplies shall not be used for *repairs* that are prohibited in the *International Plumbing Code*.~~

~~**408.2 Water-closet replacement.** 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 (13 L) per flushing cycle].~~

~~**408.3 Health care facilities.** Portions of medical gas systems being repaired in Group I-2, ambulatory care *facilities* and outpatient clinics shall comply with NFPA 99 requirements for *repairs*.~~))

CHAPTER 5
PRESCRIPTIVE COMPLIANCE METHOD

User note:

About this chapter: *Chapter 5 provides details for the prescriptive compliance method—one of the three main options of compliance available in this code for buildings and structures undergoing alteration, addition or change of occupancy.*

SECTION 501
GENERAL

[S] 501.1 Scope. The provisions of this chapter shall control the *alteration*, *addition* and *change of occupancy* of *existing buildings* and structures. ((~~, including *historic buildings* and structures as referenced in Section 301.3.1.~~))

[S] 501.1.1 Compliance with other methods. *Alterations*, *additions* and *changes of occupancy* to *existing buildings* and structures shall comply with the provisions of this chapter or with one of the methods provided in Section 301.3.

Note: All *alterations*, *additions* and *changes of occupancy* are also required to comply with Chapter 3.

501.2 Fire-resistance ratings. Where *approved* by the *code official*, in buildings where an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code* has been added, and the building is now sprinklered throughout, the required fire-resistance ratings of building elements and materials shall be permitted to meet the requirements of the current building code. The building is required to meet the other applicable requirements of the *International Building Code*.

Plans, investigation and evaluation reports, and other data shall be submitted indicating which building elements and materials the applicant is requesting the *code official* to review and approve for determination of applying the current building code fire-resistance ratings. Any special construction features, including fire-resistance-rated assemblies and smoke-resistive assemblies, conditions of occupancy, means of egress conditions, fire code deficiencies, *approved* modifications or *approved* alternative materials, design and methods of construction, and equipment applying to the building that impact required fire-resistance ratings shall be identified in the evaluation reports submitted.

[S] 501.3 Health care facilities. In Group I-2 *facilities*, ambulatory care *facilities* and outpatient clinics, any altered or added portion of an existing electrical or medical gas systems shall be required to meet installation and equipment requirements in ((~~NFPA 99~~)) *Seattle Electrical Code* and NFPA 99 for *medical gas systems*.

SECTION 502
ADDITIONS

[S] 502.1 General. *Additions* to any building or structure shall comply with the requirements of the *International Building Code* for new construction. *Alterations* to the *existing building* or structure shall be made to ensure that the *existing building* or structure together with the *addition* are not less complying with the provisions of the *International Building Code* than the *existing building* or structure was prior to the *addition*. An *existing building* together with its *additions* shall comply with the height and area provisions of Chapter 5 of the *International Building Code*.

Note: A significant addition to an existing building may be considered a substantial alteration in accordance with Section 307.

[S] 502.1.1 Fire walls. An existing nonconforming building to which an *addition* is made is permitted to exceed the height, number of stories and area specified for new buildings if a fire wall is provided, the *existing building* is not made more nonconforming, and the *addition* conforms to this code.

[S][BS] ((~~502.2 Disproportionate earthquake damage.~~ ~~A building assigned to Seismic Design Category D, E or F that has sustained *disproportionate earthquake damage* shall be subject to the requirements for buildings with *substantial structural damage* to vertical elements of the lateral force-resisting system.~~))

[S] 502.2 Structural. *Additions* to *existing buildings* shall comply with Section 304.3. *

[S] 502.3 Addition of dwelling units. Automatic sprinkler systems are required when new dwelling units are added to buildings according to Items 1 through 5 below. This provision is permitted to be used to add one unit after October 29, 1990.

PRESCRIPTIVE COMPLIANCE METHOD

1. One unit is permitted to be added to a residential or commercial building without an automatic sprinkler system unless sprinklers are otherwise required by this section. If more than one unit is added, the new units shall be equipped with a sprinkler system.
2. In buildings that do not comply with the provisions of this code for number of stories, allowable area, height or type of construction before the unit is added, an automatic sprinkler system shall be provided in the new unit. The addition of the new unit shall not be allowed if it increases the nonconformity.
3. In buildings undergoing *substantial alteration*, an automatic sprinkler system shall be installed where required by this code for new construction.
4. One unit is permitted to be added to an existing duplex without an automatic sprinkler system where both of the following conditions are met:
   4.1. The project is considered a *substantial alteration* only because of the change of occupancy; and
   4.2. The building complies with the requirements for building height and number of stories for a Group R-2 occupancy.
5. Where one unit is added to an existing duplex, sprinklers are required in the new unit and not in the existing units where all of the following conditions are met:
   5.1. The existing duplex does not comply with the requirements for building height and story count for a Group R-2 occupancy;
   5.2. The project is considered a *substantial alteration* only because of the *change of occupancy*;
   5.3. The new unit is constructed as an *addition* to the duplex;
   5.4. The new unit is separated from the existing duplex by a fire wall; and
   5.5. The *addition* by itself complies with the requirements for a Group R-2 occupancy.

* **((~~502.6~~)) 502.4 Enhanced classroom acoustics.** In Group E occupancies, enhanced classroom acoustics shall be provided in all classrooms in the *addition* with a volume of 20,000 cubic feet (565 m^3) or less. Enhanced classroom acoustics shall comply with the reverberation time in Section 808 of ICC A117.1.

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SECTION 503
ALTERATIONS

[S] 503.1 General. *Alterations* to any building or structure shall comply with the requirements of the *International Building Code* for new construction. *Alterations* shall be such that the *existing building* or structure is not less complying with the provisions of the *International Building Code* than the *existing building* or structure was prior to the *alteration*.

Exceptions:

1. ((~~An~~)) Subject to the approval of the *code official*, existing stairways shall not be required to comply with the requirements of Sections 1011.3 and 1011.5.2 of the *International Building Code* where the existing space and construction ((~~does~~)) do not allow a reduction in pitch or slope.
2. Handrails otherwise required to comply with Section 1011.11 of the *International Building Code* shall not be required to comply with the requirements of Section 1014.6 of the *International Building Code* regarding full extension of the handrails where such extensions would be hazardous because of plan configuration.
3. Where changes to offices, outpatient clinics or medical offices occur on a multi-tenant floor that contains nonconforming corridors, new tenant walls associated with the tenant change need not meet the standards for one-hour corridor construction, unless the project is considered a *substantial alteration*.
4. Automatic sprinkler systems are required when new dwelling units are added to buildings according to Items 4.1 through 4.6 below. This exception is permitted to be used to add one unit after October 29, 1990.
   4.1. One unit is permitted to be added to a residential or commercial building without an automatic sprinkler system unless sprinklers are otherwise required by this section. If more than one unit is added, the new units shall be equipped with a sprinkler system.
   4.2. In buildings that do not comply with the provisions of this code for number of stories, allowable area, height or type of construction before the unit is added, an automatic sprinkler system shall be provided in the new unit. The addition of the new unit shall not be allowed if it increases the nonconformity.
   4.3. In buildings undergoing *substantial alteration*, an automatic sprinkler system shall be installed where required by this code for new construction.

4.4. One unit is permitted to be added to an existing duplex without an automatic sprinkler system where both of the following conditions are met:

4.4.1. The project is considered a *substantial alteration* only because of the *change of occupancy*; and

4.4.2. The building complies with the requirements for building height and number of stories for a Group R-2 occupancy.

4.5. Where one unit is added to an existing duplex, sprinklers are required in the new unit and not in the existing units where all of the following conditions are met:

4.5.1. The existing duplex does not comply with the requirements for building height and story count for a Group R-2 occupancy;

4.5.2. The project is considered a *substantial alteration* only because of the *change of occupancy*;

4.5.3. The new unit is constructed as an *addition* to the duplex;

4.5.4. The new unit is separated from the existing duplex by a fire wall; and

4.5.5. The addition by itself complies with the requirements for a Group R-2 occupancy.

4.6. A sprinkler system is not required when a Group U occupancy that is accessory to a Group R-3 occupancy is converted to a dwelling unit.

5. Ceilings in basements are permitted to project to within 6 feet 8 inches (2032 mm) of the finished floor, and beams, girders, ducts or other obstructions are permitted to project to within 6 feet 4 inches (1931 mm) of the finished floor.

6. Ceiling height in buildings in existence prior to October 17, 1979, shall be permitted to comply with rules promulgated by the code official.

((~~3~~)) 7. Where provided in below-grade transportation stations, existing and new escalators shall be permitted to have a clear width of less than 32 inches (815 mm).

[S] 503.2 Structural. *Alterations* to *existing buildings* and structures shall comply with Section 304.1. *

[S] ((~~[BS] 503.5 Seismic Design Category F.~~ ~~Where the *work area* exceeds 50 percent of the building area, and where the building is assigned to Seismic Design Category F, the structure of the altered building shall meet the requirements of Sections 1609 and 1613 of the *International Building Code*. Reduced seismic forces shall be permitted.~~)) *

[S] ((~~[BS] 503.6 Bracing for unreinforced masonry parapets on reroofing.~~ ~~Where the intended *alteration* requires a permit for reroofing and involves removal of roofing materials from more than 25 percent of the roof area of a building assigned to Seismic Design Category D, E or F that has parapets constructed of unreinforced masonry, the work shall include installation of parapet bracing to resist out-of-plane seismic forces, unless an evaluation demonstrates compliance of such items. Reduced seismic forces shall be permitted.~~))

[S] ((~~[BS] 503.7 Anchorage for concrete and reinforced masonry walls.~~ ~~Where the *work area* exceeds 50 percent of the building area, the building is assigned to Seismic Design Category C, D, E or F and the building's structural system includes concrete or reinforced masonry walls with a flexible roof diaphragm, the *alteration* work shall include installation of wall anchors at the roof line, unless an evaluation demonstrates compliance of existing wall anchorage. Use of reduced seismic forces shall be permitted.~~))

[S] ((~~[BS] 503.9 Bracing for unreinforced masonry parapets in major alterations.~~ ~~Where the *work area* exceeds 50 percent of the building area, and where the building is assigned to Seismic Design Category C, D, E or F, parapets constructed of unreinforced masonry shall have bracing installed as needed to resist out-of-plane seismic forces, unless an evaluation demonstrates compliance of such items. Reduced seismic forces shall be permitted.~~)) *

[S] ((~~[BS] 503.11 Substantial structural alteration.~~ ~~Where the *work area* exceeds 50 percent of the building area and where work involves a *substantial structural alteration*, the lateral load-resisting system of the altered building shall satisfy the requirements of Sections 1609 and 1613 of the *International Building Code*. Reduced seismic forces shall be permitted.~~ *

~~**Exceptions:**~~

~~1. Buildings of Group R occupancy with not more than five dwelling 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 the intended *alteration* involves only the lowest story of a building, only the lateral load-resisting components in and below that story need comply with this section.~~))

[S] ((~~[BS] 503.12 Roof diaphragms resisting wind loads in high wind regions.~~ ~~Where the intended *alteration* requires a permit for reroofing and involves removal of roofing materials from more than 50 percent of the roof diaphragm of a building or section of a building located where the ultimate design wind speed is greater than 130 mph (58 m/s) in accordance with Figure 1609.3(1) of the *International Building Code*, roof diaphragms, connections of the roof diaphragm to roof framing members, and roof to wall connections shall be evaluated for the wind loads specified in Section 1609 of the *International*~~

~~*Building Code*, including wind uplift. If the diaphragms and connections in their current condition are not capable of resisting 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in Section 1609 of the *International Building Code.*~~

~~**Exception:** Buildings that have been demonstrated to comply with the wind load provisions in ASCE 7-88 or later editions.~~))

* **((~~503.14~~)) 503.3 Smoke compartments.** In Group I-2 occupancies where the *alteration* is on a story used for sleeping rooms for more than 30 care recipients, the story shall be divided into not less than two compartments by smoke barrier walls in accordance with Section 407.5 of the *International Building Code* as required for new construction.

* **((~~503.15~~)) 503.4 Refuge areas.** Where *alterations* affect the configuration of an area utilized as a refuge area, the capacity of the refuge area shall not be reduced below the required capacity of the refuge area for horizontal exits in accordance with Section 1026.4 of the *International Building Code*.

Where the horizontal exit also forms a smoke compartment, the capacity of the refuge area for Group I-1, I-2 and I-3 occupancies and Group B ambulatory care *facilities* shall not be reduced below that required in Sections 407.5.3, 408.6.2, 420.6.1 and 422.3.2 of the *International Building Code,* as applicable.

((~~503.16~~)) 503.5 Enhanced classroom acoustics. In Group E occupancies, where the *work area* exceeds 50 percent of the building area, enhanced classroom acoustics shall be provided in all classrooms with a volume of 20,000 cubic feet (565 m^3) or less. Enhanced classroom acoustics shall comply with the reverberation time in Section 808 of ICC A117.1.

((~~503.17~~)) 503.6 Locking arrangements in educational occupancies. In Group E occupancies, Group B educational occupancies and Group I-4 occupancies, egress doors with locking arrangements designed to keep intruders from entering the room shall comply with Section 1010.2.8 of the *International Building Code*.

((~~503.18~~)) 503.7 Two-way communications systems. Where the *work area* for *alterations* exceeds 50 percent of the building area and the building has elevator service, a two-way communication systems shall be provided where required by Section 1009.8 of the *International Building Code*.

SECTION 504
FIRE ESCAPES

[S][BE] 504.1 Where permitted. Fire escapes that are altered shall ((~~be permitted only as provided for in Sections 504.1.1 through 504.1.4~~)) comply with this section. Existing fire escapes shall continue to be accepted as a component in the means of egress in *existing buildings* only.

~~**(([BE] 504.1.1 New buildings.** Fire escapes shall not constitute any part of the required means of egress in new buildings.~~

~~**[BE] 504.1.2 Existing fire escapes.** Existing fire escapes shall continue to be accepted as a component in the means of egress in *existing buildings* only.~~

~~**[BE] 504.1.3 New fire escapes.** New fire escapes for *existing buildings* shall be permitted only where exterior stairways cannot be utilized because of lot lines limiting stairway size or because of sidewalks, alleys or roads at grade level. New fire escapes shall not incorporate ladders or access by windows.~~

~~**[BE] 504.1.4 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.~~))

[S][BE] 504.2 Location. Where located on the front of the building and where projecting beyond the building line, the lowest landing shall be not less than ((~~7 feet (2134 mm)~~)) 8 feet (2438 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 be not less than 12 feet (3658 mm).

[S][BE] 504.3 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 V construction. Walkways and railings located over or supported by combustible roofs in buildings of Type III and IV construction are permitted to be of wood not less than nominal 2 inches (51 mm) thick.~~))

[BE] 504.4 Dimensions. Stairways shall be not less than 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 stairways 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.

[BE] 504.5 Opening protectives. Doors and windows within 10 feet (3048 mm) of fire escape stairways shall be protected with 3/4-hour opening protectives.

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

SECTION 505
WINDOWS AND EMERGENCY ESCAPE OPENINGS

505.1 Replacement windows. The installation or replacement of windows shall be as required for new installations.

[S] 505.2 Window opening control devices on replacement windows. In Group R-2 or R-3 buildings containing dwelling units, ((~~and one- and two-family dwellings and townhouses regulated by the *International Residential Code*,~~)) window opening control devices or fall prevention devices complying with ASTM F2090 shall be installed where an existing window is replaced and where all of the following apply to the replacement window:

1. The window is operable.
2. One of the following applies:
   2.1. The window replacement includes replacement of the sash and frame.
   2.2. The window replacement includes the sash only where the existing frame remains.
3. One of the following applies:
   3.1. In Group R-2 or R-3 buildings containing dwelling units, the bottom of the clear opening of the window opening is at a height less than 36 inches (915 mm) above the finished floor.
   ((~~3.2. In one- and two-family dwellings and townhouses regulated by the *International Residential Code*, the bottom of the clear opening of the window opening is at a height less than 24 inches (610 mm) above the finished floor.~~))
4. The window will permit openings that will allow passage of a 4-inch-diameter (102 mm) sphere when the window is in its largest opened position.
5. The vertical distance from the bottom of the clear opening of the window opening to the finished grade or other surface below, on the exterior of the building, is greater than 72 inches (1829 mm).

Exception: Operable windows where the bottom of the clear opening of the window opening is located more than 75 feet (22 860 mm) above the finished grade or other surface below, on the exterior of the room, space or building, and that are provided with window fall prevention devices that comply with ASTM F2006.

[S] 505.3 Replacement window emergency escape and rescue openings. Where windows are required to provide *emergency escape and rescue openings* in Group R-2 and R-3 occupancies ((~~and one- and two-family dwellings and townhouses regulated by the *International Residential Code*,~~)) replacement windows shall be exempt from the requirements of Section 1031.3 of the *International Building Code* and Section R310.2 of the *International Residential Code*, provided that the replacement window meets the following conditions:

1. The replacement window is the manufacturer's largest standard size window that will fit within the existing frame or existing rough opening. The replacement window shall be permitted to be of the same operating style as the existing window or a style that provides for an equal or greater window opening area than the existing window.
2. Where the replacement of the window is part of a *change of occupancy*, it shall comply with Section 1011.5.6.

505.3.1 Control devices. Window opening control devices or fall prevention devices complying with ASTM F2090 shall be permitted for use on windows required to provide *emergency escape and rescue openings*. After operation to release the control device allowing the window to fully open, the control device shall not reduce the net clear opening area of the window unit. *Emergency escape and rescue openings* shall be operational from the inside of the room without the use of keys or tools.

[S] 505.4 Bars, grilles, covers or screens. Bars, grilles, covers, screens or similar devices are permitted to be placed over *emergency escape and rescue openings*, bulkhead enclosure or window wells that serve such openings, provided all of the following conditions are met:

1. The minimum net clear opening size complies with the code that was in effect at the time of construction.
2. Such devices shall be releasable or removable from the inside without the use of a key, tool or force greater than that which is required for normal operation of the escape and rescue opening.
3. Where such devices are installed, they shall not reduce the net clear opening of the emergency escape and rescue openings.

((~~4. Smoke alarms shall be installed in accordance with Section 907.2.10 of the *International Building Code*.~~))

SECTION 506
CHANGE OF OCCUPANCY

[S] 506.1 Compliance. A *change of occupancy* shall not be made in any building or portion thereof unless that building is made to comply with the requirements of the *International Building Code* for the use or occupancy. Changes of occupancy in a building or portion thereof shall be such that the *existing building* is not less complying with the provisions of ((~~this code~~))

the *International Building Code* than the *existing building* or structure was prior to the change. Subject to the approval of the *code official*, changes of occupancy shall be permitted without complying with all of the requirements of this code for the new occupancy, provided that the new occupancy is less hazardous, based on life and fire risk, than the existing occupancy.

Note: Conditions arising after the adoption of this code, and conditions not legally in existence at the time of adoption of this code may trigger requirements based on *International Fire Code* Section 102.1, including building upgrades.

Exceptions:

1. The building need not be made to comply with Chapter 16 of the *International Building Code* unless required by Section ((~~506.5~~)) 304.2.
2. Subject to the approval of the *code official*, an automatic sprinkler system is not required in dwelling units according to Items 2.1 through 2.6 below. This exception is permitted to be used for the change in occupancy for one dwelling unit after October 29, 1990.
   - 2.1. The occupancy of one unit is permitted to be changed to a dwelling unit without an automatic sprinkler system unless sprinklers are otherwise required by this chapter. If more than one unit is changed, the new units shall be equipped with a sprinkler system.
   - 2.2. In buildings that do not comply with the provisions of this code for number of stories, allowable area, height or type of construction before the occupancy of the unit is changed, an automatic sprinkler system shall be provided in the new unit. The *change of occupancy* shall not be allowed if it increases the nonconformity.
   - 2.3. In buildings undergoing *substantial alteration*, an automatic sprinkler system shall be installed where required by this code for new construction.
   - 2.4. The occupancy of one unit is permitted to be changed to a dwelling unit in an existing duplex without an automatic sprinkler system where both of the following conditions are met:
     - 2.4.1. The project is considered a *substantial alteration* only because of the *change of occupancy*; and
     - 2.4.2. The building complies with the requirements for building height and number of stories for a Group R-2 occupancy.
   - 2.5. Where the occupancy of one unit is changed to a dwelling unit in an existing duplex, sprinklers are required in the new unit and not in the existing units where all of the following conditions are met:
     - 2.5.1. The existing duplex does not comply with the requirements for building height and story count for a Group R-2 occupancy;
     - 2.5.2. The project is considered a *substantial alteration* only because of the *change of occupancy*;
     - 2.5.3. The new unit is constructed as an *addition* to the duplex;
     - 2.5.4. The new unit is separated from the existing duplex by a fire wall; and
     - 2.5.5. The addition by itself complies with the requirements for a Group R-2 occupancy.
   - 2.6. A sprinkler system is not required when a Group U occupancy that is accessory to a Group R-3 occupancy is converted to a dwelling unit.

[W][S] 506.1.1 Change in the ((~~character of~~)) group or use. A change of occupancy with no *change of occupancy* classification shall not be made to any structure that will subject the structure to any special provisions of the applicable International Codes, Uniform Plumbing Code, and Seattle Electrical Code, without approval of the *code official*. Compliance shall be only as necessary to meet the specific provisions and is not intended to require the entire building be brought into compliance.

Note: The following illustrate how *change of occupancy* is interpreted:
- Change in classification is a change in the letter designation. An example is a change from B occupancy to R occupancy.
- Change in occupancy group is change in the number designation within an occupancy classification. An example is a change from group R-1 occupancy to R-2 occupancy.
- Change of use is a change in the subcategory within the occupancy group. An example is a change from R-2 apartment to R-2 boarding house.

[S] ((~~506.2 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.~~))

[S] 506.2 Conversion to residential occupancy. Upon conversion of an *existing building*, or portion thereof, to residential occupancy, *International Building Code* Sections 420, 1203 and 2902 shall apply, and the elements of the dwelling unit envelope that are altered shall comply with the sound transmission control requirements of *International Building Code* Section 1206.

[S] 506.3 Stairways. ((~~An~~)) Subject to the approval of the *code official*, existing stairways shall not be required to comply with the requirements of Section 1011 of the *International Building Code* where the existing space and construction does not allow a reduction in pitch or slope.

506.4 Existing emergency escape and rescue openings. Where a *change of occupancy* would require an *emergency escape and rescue opening* in accordance with Section 1031.1 of the *International Building Code*, operable windows serving as the *emergency escape and rescue opening* shall comply with the following:

1. An existing operable window shall provide a minimum net clear opening of 4 square feet (0.38 m^2) with a minimum net clear opening height of 22 inches (559 mm) and a minimum net clear opening width of 20 inches (508 mm).
2. A replacement window where such window complies with both of the following:
   2.1. The replacement window meets the size requirements in Item 1.
   2.2. The replacement window is the manufacturer's largest standard size window that will fit within the existing frame or existing rough opening. The replacement window shall be permitted to be of the same operating style as the existing window or a style that provides for an equal or greater window opening area than the existing window.

[S] 506.5 Structural. Any building undergoing a *change of occupancy* that results in the building being reclassified to a higher risk category shall satisfy the requirements of ((~~this section~~)) Section 304.2.

((~~**506.5.1 Live loads.** Structural elements carrying tributary live loads from an area with a *change of occupancy* shall satisfy the requirements of Section 1607 of the *International Building Code*. Design live loads for areas of new occupancy shall be based on Section 1607 of the *International Building Code*. Design live loads for other areas shall be permitted to use previously *approved* design live loads.~~

~~**Exception:** Structural elements whose demand-capacity ratio considering the *change of occupancy* is not more than 5 percent greater than the demand-capacity ratio based on previously *approved* live loads need not comply with this section.~~

~~**506.5.2 Snow and wind loads.** Where a *change of occupancy* results in a structure being assigned to a higher *risk category*, the structure shall satisfy the requirements of Sections 1608 and 1609 of the *International Building Code* for the new *risk category*.~~

~~**Exception:** Where the area of the new occupancy is less than 10 percent of the building area, compliance with this section is not required. The cumulative effect of occupancy changes over time shall be considered.~~

~~**506.5.4 Access to Risk Category IV.** Any structure that provides operational access to an adjacent structure assigned to *Risk Category* IV as the result of a *change of occupancy* shall itself satisfy the requirements of Sections 1608, 1609 and 1613 of the *International Building Code*. For compliance with Section 1613, *International Building Code*-level seismic forces shall be used. Where operational access to the *Risk Category* IV structure is less than 10 feet (3048 mm) from either an interior lot line or from another structure, access protection from potential falling debris shall be provided.~~)) *

506.6 Enhanced classroom acoustics. In Group E occupancies, where the *work area* exceeds 50 percent of the building area, enhanced classroom acoustics shall be provided in all classrooms with a volume of 20,000 cubic feet (565 m^3) or less. Enhanced classroom acoustics shall comply with the reverberation time in Section 808 of ICC A117.1.

[S] 506.7 Substantial alterations. *Changes of occupancy* that are *substantial alterations* shall comply with Section 311.

[S] SECTION 507
((~~HISTORIC BUILDINGS~~)) LANDMARKS

507.1 ((~~Historic~~)) Landmark buildings. ((~~The provisions of this code that require improvements relative to a building's existing condition or, in the case of *repairs*, that require improvements relative to a building's predamage condition, shall not be mandatory for *historic buildings* unless specifically required by this section.~~)) Landmark buildings shall comply with Section 310.

((~~**507.2 Life safety hazards.** The provisions of this code shall apply to *historic buildings* judged by the *code official* to constitute a distinct life safety hazard.~~

~~**[BS] 507.3 Flood hazard areas.** Within *flood hazard areas* established in accordance with Section 1612.3 of the *International Building Code*, or Section R322 of the *International Residential Code*, as applicable, where the work proposed constitutes *substantial improvement*, the building shall be brought into compliance with Section 1612 of the *International Building Code*, or Section R322 of the *International Residential Code*, as applicable.~~

~~**Exception:** *Historic buildings* meeting any of the following criteria need not be brought into compliance:~~

~~1. Listed or preliminarily determined to be eligible for listing in the National Register of Historic Places.~~

2. Determined by the Secretary of the US 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.
3. Designated as historic under a state or local historic preservation program that is approved by the Department of Interior.

[BS] 507.4 Structural. *Historic buildings* shall comply with the applicable structural provisions in this chapter.

Exceptions:

1. The *code official* shall be authorized to accept existing floors and existing live loads and to approve operational controls that limit the live load on any floor.
2. *Repair* of *substantial structural damage* is not required to comply with Sections 405.2.3, and 405.2.4. *Substantial structural damage* shall be repaired in accordance with Section 405.2.1.))

CHAPTER 6
CLASSIFICATION OF WORK

User note:

About this chapter: *Chapter 6 provides an overview of the Work Area Method available as an option for rehabilitation of a building. The chapter defines the different classifications of alterations and provides general requirements for alterations, change of occupancy, additions and historic buildings. Detailed requirements for all of these are given in Chapters 7 through 12.*

SECTION 601
GENERAL

[S] 601.1 Scope. The provisions of this chapter shall be used in conjunction with Chapters 7 through ((~~12~~)) 11 and 14 and shall apply to the *alteration*, *addition* and *change of occupancy* of *existing structures*. ((~~, including historic and moved structures, as referenced in Section 301.3.2.~~)) The work performed on an *existing building* shall be classified in accordance with this chapter.

Note: All alterations, additions and changes of occupancy are required to comply with Chapter 3.

[S] 601.1.1 Compliance with other alternatives. *Alterations*, *additions* and *changes of occupancy* to *existing structures* shall comply with the provisions of Chapters 3 and 7 through ((~~12~~)) 11 or with one of the alternatives provided in Section 301.3.

601.2 Work area. The *work area*, as defined in Chapter 2, shall be identified on the construction documents.

SECTION 602
ALTERATION—LEVEL 1

602.1 Scope. Level 1 alterations include the removal and replacement or the covering of existing materials, elements, *equipment* or *fixtures* using new materials, elements, *equipment* or *fixtures* that serve the same purpose.

602.2 Application. Level 1 *alterations* shall comply with the provisions of Chapter 7.

SECTION 603
ALTERATION—LEVEL 2

[W] 603.1 Scope. Level 2 *alterations* include the addition or elimination of any door or window, the reconfiguration or extension of any system, or the installation of any additional equipment, and shall apply where the w*ork* ((~~*area* is equal to or less than 50 percent of the building area~~)) is below the threshold of a Level 3 alteration.

Exception: The movement or addition of nonfixed and movable fixtures, cases, racks, counters and partitions not over 5 feet 9 inches (1753 mm) in height shall not be considered a Level 2 *alteration*.

603.2 Application. Level 2 *alterations* shall comply with the provisions of Chapter 7 for Level 1 *alterations* as well as the provisions of Chapter 8.

SECTION 604
ALTERATION—LEVEL 3

604.1 Scope. Level 3 *alterations* apply where the *work area* exceeds 50 percent of the *building area*.

604.2 Application. Level 3 *alterations* shall comply with the provisions of Chapters 7 and 8 for Level 1 and 2 *alterations*, respectively, as well as the provisions of Chapter 9.

SECTION 605
CHANGE OF OCCUPANCY

605.1 Scope. *Change of occupancy* provisions apply where the activity is classified as a *change of occupancy* as defined in Chapter 2.

605.2 Application. *Changes of occupancy* shall comply with the provisions of Chapter 10.

SECTION 606
ADDITIONS

606.1 Scope. Provisions for *additions* shall apply where work is classified as an *addition* as defined in Chapter 2.

606.2 Application. *Additions* to *existing buildings* shall comply with the provisions of Chapter 11.

[S] SECTION 607
((~~HISTORIC BUILDINGS~~)) LANDMARKS

[S] 607.1 Scope. ((~~*Historic building* provisions~~)) *Landmarks* shall ((~~apply to buildings classified as historic as defined in Chapter 2~~)) comply with the provisions of Section 310.

[S] ((~~607.2 Application.~~ ~~Except as specifically provided for in Chapter 12, *historic buildings* shall comply with applicable provisions of this code for the type of work being performed.~~))

CHAPTER 7
ALTERATIONS—LEVEL 1

User note:

About this chapter: *Chapter 7 provides the technical requirements for those existing buildings that undergo Level 1 alterations as described in Section 603, which includes replacement or covering of existing materials, elements, equipment or fixtures using new materials for the same purpose. This chapter, similar to other chapters of this code, covers all building-related subjects, such as structural, mechanical, plumbing, electrical and accessibility as well as the fire and life safety issues when the alterations are classified as Level 1. The purpose of this chapter is to provide detailed requirements and provisions to identify the required improvements in the existing building elements, building spaces and building structural system. This chapter is distinguished from Chapters 8 and 9 by involving only replacement of building components with new components. In contrast, Level 2 alterations involve more space reconfiguration, and Level 3 alterations involve more extensive space reconfiguration, exceeding 50 percent of the building area.*

SECTION 701
GENERAL

[S] 701.1 Scope. Level 1 *alterations* as described in Section 602 shall comply with the requirements of this chapter. ((~~Level 1 *alterations* to *historic buildings* shall comply with this chapter, except as modified in Chapter 12.~~))

701.2 Conformance. An *existing building* or portion thereof shall not be altered such that the building becomes less safe than its existing condition.

Exception: Where the current level of safety or sanitation is proposed to be reduced, the portion altered shall conform to the requirements of the *International Building Code*.

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SECTION 702
BUILDING ELEMENTS AND MATERIALS

702.1 Interior finishes. Newly installed interior wall and ceiling finishes shall comply with Chapter 8 of the *International Building Code*.

702.2 Interior floor finish. New interior floor finish, including new carpeting used as an interior floor finish material, shall comply with Section 804 of the *International Building Code*.

702.3 Interior trim. Newly installed interior trim materials shall comply with Section 806 of the *International Building Code*.

[S] 702.4 Window opening control devices on replacement windows. In Group R-2 or R-3 buildings containing dwelling units, ((~~and one- and two-family dwellings and townhouses regulated by the *International Residential Code*,~~)) window opening control devices complying with ASTM F2090 shall be installed where an existing window is replaced and where all of the following apply to the replacement window:

1. The window is operable.
2. One of the following applies:
   2.1. The window replacement includes replacement of the sash and frame.
   2.2. The window replacement includes the sash only where the existing frame remains.

((~~3. One of the following applies:~~

~~3.1~~)) 3. In Group R-2 or R-3 buildings containing dwelling units, the bottom of the clear opening of the window opening is at a height less than 36 inches (915 mm) above the finished floor.

((~~3.2. In one- and two-family dwellings and townhouses regulated by the *International Residential Code*, the bottom of the clear opening of the window opening is at a height less than 24 inches (610 mm) above the finished floor.~~))

4. The window will permit openings that will allow passage of a 4-inch-diameter (102 mm) sphere when the window is in its largest opened position.
5. The vertical distance from the bottom of the clear opening of the window opening to the finished grade or other surface below, on the exterior of the building, is greater than 72 inches (1829 mm).

Exception: Operable windows where the **bottom** of the **clear opening** of the window opening is located more than 75 feet (22 860 mm) above the finished grade or other surface below, on the exterior of the room, space or building, and that are provided with window fall prevention devices that comply with ASTM F2006.

[S] 702.5 Replacement window for emergency escape and rescue openings. Where windows are required to provide *emergency escape and rescue openings* in Group R-2 and R-3 occupancies, ((~~and one- and two-family dwellings and townhouses regulated by the *International Residential Code*,~~)) replacement windows shall be exempt from the requirements of Section 1031.3 of the *International Building Code*, ((~~and Section R310.2 of the *International Residential Code*,~~)) provided that the replacement window meets the following conditions:

1. The replacement window is the manufacturer's largest standard size window that will fit within the existing frame or existing rough opening.
2. Where the replacement window is part of a *change of occupancy* it shall comply with Section 1011.5.6.

702.5.1 Control devices. Window opening control devices or fall prevention devices complying with ASTM F2090 shall be permitted for use on windows required to provide *emergency escape and rescue openings.* After operation to release the control device allowing the window to fully open, the control device shall not reduce the net clear opening area of the window unit. *Emergency escape and rescue openings* shall be operational from the inside of the room without the use of keys or tools.

702.6 Bars, grilles, covers or screens. Bars, grilles, covers, screens or similar devices are permitted to be placed over emergency escape and rescue openings, bulkhead enclosure or window wells that serve such openings, provided all of the following conditions are met:

1. The minimum net clear opening size complies with the code that was in effect at the time of construction.
2. Such devices shall be releasable or removable from the inside without the use of a key, tool or force greater than that which is required for normal operation of the escape and rescue opening.
3. Where such devices are installed, they shall not reduce the net clear opening of the emergency escape and rescue openings.
4. Smoke alarms shall be installed in accordance with Section 907.2.11 of the *International Building Code*.

[W][S] 702.7 Materials and methods. New work shall comply with the materials and methods requirements in the *International Building Code*, ((~~*International*~~)) *Seattle Energy* ((~~*Conservation*~~)) *Code*, *International Mechanical Code* and ((~~*International*~~)) *Uniform Plumbing Code*, as applicable, that specify material standards, detail of installation and connection, joints, penetrations and continuity of any element, component or system in the building.

[FG] 702.7.1 International Fuel Gas Code. The following sections of the *International Fuel Gas Code* shall constitute the fuel gas materials and methods requirements for Level 1 *alterations*.

1. Chapter 3, entitled "General Regulations," except Sections 303.7 and 306.
2. Chapter 4, entitled "Gas Piping Installations," except Sections 401.8 and 402.3.
   2.1. Sections 401.8 and 402.3 shall apply where the work being performed increases the load on the system such that the existing pipe does not meet the size required by code. Existing systems that are modified shall not require resizing as long as the load on the system is not increased and the system length is not increased even if the altered system does not meet code minimums.
3. Chapter 5, entitled "Chimneys and Vents."
4. Chapter 6, entitled "Specific Appliances."

SECTION 703
FIRE PROTECTION

703.1 General. *Alterations* shall be done in a manner that maintains the level of fire protection provided.

SECTION 704
MEANS OF EGRESS

704.1 General. *Alterations* shall be done in a manner that maintains the level of protection provided for the means of egress.

704.1.1 Projections in nursing home corridors. In Group I-2, Condition 1 occupancies, where the corridor is at least 96 inches (2438 mm) wide, projections into the corridor width are permitted in accordance with Section 407.4.3 of the *International Building Code*.

704.2 Casework. Addition, alteration or reconfiguration of nonfixed and movable cases, counters and partitions not over 5 feet 9 inches (1753 mm) in height shall maintain the required means of egress path.

704.3 Locking arrangements in educational occupancies. In Group E occupancies, Group B educational occupancies and Group I-4 occupancies, egress doors with locking arrangements designed to keep intruders from entering the room shall comply with Section 1010.2.8 of the *International Building Code*.

[S] ((~~SECTION 706~~ ~~STRUCTURAL~~ *

~~**[BS] 706.1 General.** Where *alteration* work includes replacement of equipment that is supported by the building or where a reroofing permit is required, the provisions of this section shall apply.~~

~~**[BS] 706.2 Addition or replacement of roofing or replacement of equipment.** Any existing gravity load-carrying structural element for which an *alteration* causes an increase in design dead, live or snow load, including snow drift effects, of more than 5 percent shall be replaced or altered as needed to carry the gravity loads required by the *International Building Code* for new structures.~~

~~**Exceptions:**~~

1. ~~Buildings of Group R occupancy with not more than five dwelling or sleeping units used solely for residential purposes where the altered building complies with the conventional light-frame construction methods of the *International Building Code* or the provisions of the *International Residential Code*.~~
2. ~~Buildings in which the increased dead load is due entirely to the addition of a second layer of roof covering weighing 3 pounds per square foot (0.1437 kN/m^2) or less over an existing single layer of roof covering.~~

~~**[BS] 706.3 Additional requirements for reroof permits.** The requirements of this section shall apply to *alteration* work requiring reroof permits.~~

~~**[BS] 706.3.1 Bracing for unreinforced masonry bearing wall parapets.** Where a permit is issued for reroofing for more than 25 percent of the roof area of a building assigned to Seismic Design Category D, E or F that has parapets constructed of unreinforced masonry, the work shall include installation of parapet bracing unless an evaluation demonstrates compliance of such items. Reduced seismic forces shall be permitted.~~

~~**[BS] 706.3.2 Roof diaphragms resisting wind loads in high wind regions.** Where roofing materials are removed from more than 50 percent of the roof diaphragm or section of a building located where the ultimate design wind speed, V_{ult}, determined in accordance with Figure 1609.3(1) of the *International Building Code*, is greater than 130 mph (58 m/s), roof diaphragms, connections of the roof diaphragm to roof framing members, and roof-to-wall connections shall be evaluated for the wind loads specified in the *International Building Code*, including wind uplift. If the diaphragms and connections in their current condition are not capable of resisting 75 percent of those wind loads, they shall be replaced or strengthened in accordance with the loads specified in the *International Building Code*.~~

~~**Exception:** Buildings that have been demonstrated to comply with the wind load provisions in ASCE 7-88 or later editions.~~))

[S] SECTION ((~~707~~)) 705 ELECTRICAL

[S] ((~~707.1~~)) 705.1 Health care facilities. In Group I-2 facilities, ambulatory care facilities and outpatient clinics, any altered portion of an existing electrical systems shall be required to meet installation and equipment requirements in the *Seattle Electrical Code* and NFPA 99 for medical gas systems.

[S] ((~~SECTION 708~~ ~~ENERGY CONSERVATION~~

~~**708.1 Minimum requirements.** Level 1 *alterations* to *existing buildings* or structures do not require the entire building or structure to 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.~~))

CHAPTER 8
ALTERATIONS—LEVEL 2

User note:

About this chapter: *Like Chapter 7, the purpose of this chapter is to provide detailed requirements and provisions to identify the required improvements in the existing building elements, building spaces and building structural system when a building is being altered. This chapter is distinguished from Chapters 7 and 9 by involving space reconfiguration that could be up to and including 50 percent of the area of the building. In contrast, Level 1 alterations (Chapter 7) do not involve space reconfiguration, and Level 3 alterations (Chapter 9) involve extensive space reconfiguration that exceeds 50 percent of the building area. Depending on the nature of alteration work, its location within the building, and whether it encompasses one or more tenants, improvements and upgrades could be required for the open floor penetrations, sprinkler system or the installation of additional means of egress such as stairs or fire escapes.*

SECTION 801
GENERAL

801.1 Scope. Level 2 *alterations* as described in Section 603 shall comply with the requirements of this chapter.

Exception: Buildings in which the reconfiguration is exclusively the result of compliance with the accessibility requirements of Section 306.7.1 shall be permitted to comply with Chapter 7.

801.2 Alteration Level 1 compliance. In addition to the requirements of this chapter, all work shall comply with the requirements of Chapter 7.

[S] ((~~801.3 System installations.~~ ~~Requirements related to *work area* are not applicable where the Level 2 *alterations* are limited solely to one or more of the following:~~

~~1. Mechanical systems, electrical systems, fire protection systems and abatement of hazardous materials.~~

~~2. Windows, hardware, operating controls, electrical outlets and signs.~~

~~3. *Alterations* undertaken for the primary purpose of increasing the accessibility of a *facility*.~~))

[S] 801.4 Compliance. New construction elements, components, systems and spaces shall comply with the requirements of the *International Building Code*.

Exceptions:

1. Where windows are added they are not required to comply with the light and ventilation requirements of the *International Building Code*.

((~~2. Newly installed electrical equipment shall comply with the requirements of Section 806.~~

~~3~~)) 2. The length of dead-end corridors in newly constructed spaces shall only be required to comply with the provisions of Section 804.7.

((~~4~~)) 3. The minimum ceiling height of the newly created habitable and occupiable spaces and corridors shall be 7 feet (2134 mm).

((~~5~~)) 4. Where provided in below-grade transportation stations, existing and new escalators shall be permitted to have a clear width of no less than 32 inches (815 mm).

((~~6~~)) 5. New structural members and connections shall be permitted to comply with alternative design criteria in accordance with Section 302.

6. Automatic sprinkler systems are required when new dwelling units are added to buildings according to Items 6.1 through 6.6 below. This exception is permitted to be used to add one unit after October 29, 1990.

   6.1. One unit is permitted to be added to a residential or commercial building without an automatic sprinkler system unless sprinklers are otherwise required by this section. If more than one unit is added, the new units shall be equipped with a sprinkler system.

   6.2. In buildings that do not comply with the provisions of this code for number of stories, allowable area, height or type of construction before the unit is added, an automatic sprinkler system shall be provided in the new unit. The addition of the new unit shall not be allowed if it increases the nonconformity.

   6.3. In buildings undergoing *substantial alteration*, an automatic sprinkler system shall be installed where required by this code for new construction.

   6.4. One unit is permitted to be added to an existing duplex without an automatic sprinkler system where both of the following conditions are met:

6.4.1. The project is considered a *substantial alteration* only because of the change in occupancy; and

6.4.2. The building complies with the requirements for building height and number of stories for a Group R-2 occupancy.

6.5. Where one unit is added to an existing duplex, sprinklers are required in the new unit and not in the existing units where all of the following conditions are met:

6.5.1. The existing duplex does not comply with the requirements for building height and story count for a Group R-2 occupancy;

6.5.2. The project is considered a *substantial alteration* only because of the change in occupancy;

6.5.3. The new unit is constructed as an addition to the duplex;

6.5.4. The new unit is separated from the existing duplex by a fire wall; and

6.5.5. The addition by itself complies with the requirements for a Group R-2 occupancy.

6.6. A sprinkler system is not required when a Group U occupancy that is accessory to a Group R-3 occupancy is converted to a dwelling unit.

7. Ceilings in basements are permitted to project to within 6 feet 8 inches (2032 mm) of the finished floor, and beams, girders, ducts or other obstructions are permitted to project to within 6 feet 4 inches (1931 mm) of the finished floor.

8. Ceiling height in buildings in existence prior to October 17, 1979, shall be permitted to comply with rules promulgated by the *code official*.

SECTION 802
BUILDING ELEMENTS AND MATERIALS

802.1 Scope. The requirements of this section are limited to *work areas* in which Level 2 *alterations* are being performed and shall apply beyond the *work area* where specified.

802.2 Vertical openings. Existing vertical openings shall comply with the provisions of Sections 802.2.1, 802.2.2 and 802.2.3.

[S] 802.2.1 Existing vertical openings. 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.

Exceptions:

1. Where vertical opening enclosure is not required by the *International Building Code* or the *International Fire Code*.
2. Interior vertical openings other than stairways may be blocked at the floor and ceiling of the *work area* by installation of not less than 2 inches (51 mm) of solid wood or equivalent construction.
3. The enclosure shall not be required where:
   3.1. Connecting the main floor and mezzanines; or
   3.2. All of the following conditions are met:
      3.2.1. The communicating area has a low-hazard occupancy or has a moderate-hazard occupancy that is protected throughout by an automatic sprinkler system.
      3.2.2. The lowest or next-to-the-lowest level is a street floor.
      3.2.3. The entire area is open and unobstructed in a manner such that it is reasonable to assume that a fire in any part of the interconnected spaces will be readily obvious to all of the occupants.
      3.2.4. Exit capacity is sufficient to provide egress simultaneously for all occupants of all levels by considering all areas to be a single floor area for the determination of required exit capacity.
      3.2.5. Each floor level, considered separately, has not less than one-half of its individual required exit capacity provided by an exit or exits leading directly out of that level without having to traverse another communicating floor level or be exposed to the smoke or fire spreading from another communicating floor level.
4. In Group A occupancies, a minimum 30-minute enclosure shall be provided to protect all vertical openings not exceeding three stories.
5. In Group B occupancies, a minimum 30-minute enclosure shall be provided to protect all vertical openings not exceeding three stories. This enclosure, or the enclosure specified in Section 802.2.1, shall not be required in the following locations:
   5.1. Buildings not exceeding 3,000 square feet (279 m^2) per floor.

5.2. Buildings protected throughout by an *approved* automatic fire sprinkler system.

6. In Group E occupancies, the enclosure shall not be required for vertical openings not exceeding three stories where the building is protected throughout by an *approved* automatic fire sprinkler system.

7. In Group F occupancies, the enclosure shall not be required in the following locations:

7.1. Vertical openings not exceeding three stories.

7.2. Special-purpose occupancies where necessary for manufacturing operations and direct access is provided to not fewer than one protected stairway.

7.3. Buildings protected throughout by an *approved* automatic sprinkler system.

8. In Group H occupancies, the enclosure shall not be required for vertical openings not exceeding three stories where necessary for manufacturing operations and every floor level has direct access to not fewer than two remote enclosed stairways or other *approved* exits.

9. In Group M occupancies, a minimum 30-minute enclosure shall be provided to protect all vertical openings not exceeding three stories. This enclosure, or the enclosure specified in Section 802.2.1, shall not be required in the following locations:

9.1. Openings connecting only two floor levels.

9.2. Occupancies protected throughout by an *approved* automatic sprinkler system.

10. In Group R-1 occupancies, the enclosure shall not be required for vertical openings not exceeding three stories in ((~~the following locations: 10.1. Buildings~~)) buildings protected throughout by an *approved* automatic sprinkler system.

((~~10.2. Buildings with less than 25 dwelling units or sleeping units where every sleeping room above the second floor is provided with direct access to a fire escape or other *approved* second exit by means of an *approved* exterior door or window having a sill height of not greater than 44 inches (1118 mm) and where both of the following conditions are met:~~

~~10.2.1. Any exit access corridor exceeding 8 feet (2438 mm) in length that serves two means of egress, one of which is an unprotected vertical opening, shall have not fewer than one of the means of egress separated from the vertical opening by a 1-hour fire barrier.~~

~~10.2.2. The building is protected throughout by an automatic fire alarm system, installed and supervised in accordance with the *International Building Code*.~~))

11. In Group R-2 occupancies, a minimum 30-minute enclosure shall be provided to protect all vertical openings not exceeding three stories. This enclosure, or the enclosure specified in Section 802.2.1, shall not be required in the following locations:

11.1. Vertical openings not exceeding two stories with not more than four dwelling units per floor.

11.2. Buildings protected throughout by an *approved* automatic sprinkler system.

((~~11.3. Buildings with not more than four dwelling units per floor where every sleeping room above the second floor is provided with direct access to a fire escape or other *approved* second exit by means of an *approved* exterior door or window having a sill height of not greater than 44 inches (1118 mm) and the building is protected throughout by an automatic fire alarm system complying with Section 803.4.~~

~~12. One- and two-family dwellings.~~

~~13~~)) 12. Group S occupancies where connecting not more than two floor levels or where connecting not more than three floor levels and the structure is equipped throughout with an *approved* automatic sprinkler system.

((~~14~~)) 13. Group S occupancies where vertical opening protection is not required for open parking garages and ramps.

802.2.2 Supplemental shaft and floor opening enclosure requirements. Where the *work area* on any floor exceeds 50 percent of that floor area, the enclosure requirements of Section 802.2 shall apply to vertical openings other than stairways throughout the floor.

Exception: Vertical openings located in tenant spaces that are entirely outside the *work area*.

802.2.3 Supplemental stairway enclosure requirements. Where the *work area* on any floor exceeds 50 percent of that floor area, stairways that are part of the means of egress serving the *work area* shall, at a minimum, be enclosed with smoketight construction on the highest *work area* floor and all floors below.

Exception: Where stairway enclosure is not required by the *International Building Code* or the *International Fire Code*.

802.3 Smoke compartments. In Group I-2 occupancies where the *work area* is on a story used for sleeping rooms for more than 30 care recipients, the story shall be divided into not less than two compartments by smoke barrier walls in accordance with Section 407.5 of the *International Building Code* as required for new construction.

802.4 Interior finish. The interior finish and trim of walls and ceilings in exits and corridors in any *work area* shall comply with the requirements of the *International Building Code*.

Exception: Existing materials that do not comply with the requirements of the *International Building Code* shall be permitted to be treated with an approved fire-retardant coating in accordance with the manufacturer's instructions to achieve the required classification. Compliance with this section shall be demonstrated by testing the fire-retardant coating on the same material and achieving the required performance. Where the same material is not available, testing on a similar material shall be permitted.

802.4.1 Supplemental interior finish requirements. Where the *work area* on any floor exceeds 50 percent of the floor area, Section 802.4 shall apply to the interior finish and trim in exits and corridors serving the *work area* throughout the floor.

Exception: Interior finish within tenant spaces that are entirely outside the *work area*.

802.5 Guards. The requirements of Sections 802.5.1 and 802.5.2 shall apply in all *work areas*.

802.5.1 Minimum requirement. Every portion of a floor, such as a balcony or a loading dock, that is more than 30 inches (762 mm) above the floor or grade below and is not provided with guards, or those in which the existing guards are judged to be in danger of collapsing, shall be provided with guards.

802.5.2 Design. Where there are no guards or where existing guards must be replaced, the guards shall be designed and installed in accordance with the *International Building Code*.

802.6 Fire-resistance ratings. Where *approved* by the *code official*, buildings where an automatic sprinkler system installed in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code* has been added, and the building is now sprinklered throughout, the required fire-resistance ratings of building elements and materials shall be permitted to meet the requirements of the current building code. The building is required to meet the other applicable requirements of the *International Building Code*.

Plans, investigation and evaluation reports, and other data shall be submitted indicating which building elements and materials the applicant is requesting the *code official* to review and approve for determination of applying the current building code fire-resistance ratings. Any special construction features, including fire-resistance-rated assemblies and smoke-resistive assemblies, conditions of occupancy, means-of-egress conditions, fire code deficiencies, *approved* modifications or *approved* alternative materials, design and methods of construction, and equipment applying to the building that impact required fire-resistance ratings shall be identified in the evaluation reports submitted.

SECTION 803
FIRE PROTECTION

[S] 803.1 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*.

Exception: The fire *code official* may modify or waive the fire protection requirements for Level 2 *alteration* projects in which the fire protection requirements constitute an excessive burden.

803.1.1 Corridor ratings. Where an *approved* automatic sprinkler system is installed throughout the story, the required fire-resistance rating for any corridor located on the story 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 stairway landings serving the floor and the intermediate landings immediately below.

803.2 Automatic sprinkler systems. Automatic sprinkler systems shall be provided in accordance with the requirements of Sections 803.2.1 through 803.2.6. Installation requirements shall be in accordance with the *International Building Code*.

803.2.1 High-rise buildings. In high-rise buildings, *work areas* that have exits or corridors shared by more than one tenant or that have exits or corridors serving 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.

803.2.1.1 Supplemental automatic sprinkler system requirements. Where the *work area* on any floor exceeds 50 percent of that floor area, Section 803.2.1 shall apply to the entire floor on which the *work area* is located.

Exception: Occupied tenant spaces that are entirely outside the *work area*.

[S] 803.2.2 Groups A, B, E, F-1, H, I-1, I-3, I-4, M, R-1, R-2, ((~~R-4,~~)) S-1 and S-2. In buildings with occupancies in Groups A, B, E, F-1, H, I-1, I-3, I-4, M, R-1, R-2, ((~~R-4,~~)) S-1 and S-2, *work areas* that have exits or corridors shared by more than one tenant or that have exits or corridors serving an occupant load greater than 30 shall be provided with automatic sprinkler protection where both 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.

Exception: If the building does not have sufficient municipal water supply for design of a fire sprinkler system available to the floor without installation of a new fire pump, *work areas* shall be protected by an automatic smoke detection system throughout all occupiable spaces other than sleeping units or individual dwelling units that activates the occupant notification system in accordance with Sections 907.4, 907.5 and 907.6 of the *International Building Code*.

803.2.2.1 Mixed uses. In *work areas* containing mixed uses, one or more of which requires automatic sprinkler protection in accordance with Section 803.2.2, 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.

803.2.3 Group I-2. In Group I-2 occupancies, an automatic sprinkler system installed in accordance with Section 903.3.1.1 of the *International Fire Code* shall be provided in the following

1. In Group I-2, Condition 1, throughout the *work area*.
2. In Group I-2, Condition 2, throughout the *work area* where the *work area* is 50 percent or less of the smoke compartment.
3. In Group I-2, Condition 2, throughout the smoke compartment in which the work occurs where the *work area* exceeds 50 percent of the smoke compartment.

803.2.4 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 without installation of a new fire pump.

803.2.5 Other required automatic sprinkler systems. In buildings and areas listed in Table 903.2.11.6 of the *International Building Code*, *work areas* that have exits or corridors shared by more than one tenant or that have exits or corridors serving an occupant load greater than 30 shall be provided with an automatic sprinkler system under the following conditions

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

803.2.6 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.
4. Where *approved* by the *code official*, *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 key or hub gate valves in 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.

803.3 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 Code*.

Exceptions:

1. A pump shall not be required provided that the standpipes are capable of accepting delivery by fire department apparatus of not less than 250 gallons per minute (gpm) at 65 pounds per square inch (psi) (946 L/m at 448 KPa) to the topmost floor in buildings equipped throughout with an automatic sprinkler system or not less than 500 gpm at

804.4 Number of exits. The number of exits shall be in accordance with Sections 804.4.1 through 804.4.3.

804.4.1 Minimum number. Every story utilized for human occupancy on which there is a *work area* that includes exits or corridors shared by more than one tenant within the *work area* shall be provided with the minimum number of exits based on the occupancy and the occupant load in accordance with the *International Building Code*. In addition, the exits shall comply with Sections 804.4.1.1 and 804.4.1.2.

[S] 804.4.1.1 Single-exit buildings. A single exit or access to a single exit shall be permitted from spaces, any story or any occupied roof where one of the following conditions exists:

1. The occupant load, number of dwelling units and exit access travel distance do not exceed the values in Table 804.4.1.1(1) or Table 804.4.1.1(2).
2. In Group R-1 or R-2, buildings without an *approved* automatic sprinkler system, individual single-story or multiple-story dwelling or sleeping units shall be permitted to have a single exit or access to a single exit from the dwelling or sleeping unit provided one of the following criteria are met:
   2.1. The occupant load is not greater than 10 and the exit access travel distance within the unit does not exceed 75 feet (22 860 mm).
   2.2. The building is not more than three stories in height; all third-story space is part of dwelling with an exit access doorway on the second story; and the portion of the exit access travel distance from the door to any habitable room within any such unit to the unit entrance doors does not exceed 50 feet (15 240 mm).
3. In buildings of Group R-2 occupancy of any number of stories with not more than four dwelling units per floor served by an interior exit stairway; with a smokeproof enclosure in accordance with Sections 909.20 and 1023.12 of the *International Building Code* or an exterior stairway as an exit; and where the portion of the exit access travel distance from the dwelling unit entrance door to the exit is not greater than 20 feet (6096 mm).
4. In Group R-2 and R-3 occupancies, one means of egress is permitted within and from individual dwelling units with a maximum occupant load of 20 where the dwelling unit is equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 or 903.3.1.2 of the *International Building Code*.

TABLE 804.4.1.1(1)
STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR R-2 OCCUPANCIES

STORY	OCCUPANCY	MAXIMUM NUMBER OF DWELLING UNITS	MAXIMUM EXIT ACCESS TRAVEL DISTANCE (feet)
Basement, first or second story above grade plane	R-2[a]	4 dwelling units	50
Third story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 304.8 mm.
NP = Not Permitted.
NA = Not Applicable.
a. Group R-2, without an approved automatic sprinkler system and provided with emergency escape and rescue openings in accordance with Section 1031 of the *International Building Code*.

TABLE 804.4.1.1(2)
STORIES WITH ONE EXIT OR ACCESS TO ONE EXIT FOR OTHER OCCUPANCIES

STORY	OCCUPANCY	MAXIMUM OCCUPANT LOAD PER STORY	MAXIMUM EXIT ACCESS TRAVEL DISTANCE (feet)
First story above or below grade plane	B, F-2, S-2[a]	35	75
Second story above grade plane	B, F-2, S-2[a]	35	75
Third story above grade plane and higher	NP	NA	NA

For SI: 1 foot = 304.8 mm.
NP = Not Permitted.
NA = Not Applicable.
a. The length of exit access travel distance in a Group S-2 open parking garage shall be not more than 100 feet.

[S] 804.4.1.2 Fire escapes. ((~~required.~~ ~~For other than Group I-2, where more than one exit is required, an existing or newly constructed fire escape complying with Section 804.4.1.2.1 shall be accepted as providing one of the required means of egress.~~)) Fire escapes that are altered shall comply with this section. Existing fire escapes shall continue to be accepted as a component in the means of egress in *existing buildings* only.

[S] ((~~804.4.1.2.1 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.~~

~~2.1. The window shall have a minimum net clear opening of 5.7 square feet (0.53 m^2) or 5 square feet (0.46 m^2) where located at grade.~~

~~2.2. The minimum net clear opening height shall be 24 inches (610 mm) and net clear opening width shall be 20 inches (508 mm).~~

~~2.3. The bottom of the clear opening shall not be greater than 44 inches (1118 mm) 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 stairways cannot be utilized because of lot lines limiting the stairway size or because of the sidewalks, alleys, or roads at grade level.~~

~~4. Openings within 10 feet (3048 mm) of fire escape stairways 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.~~))

[S] 804.4.1.2.1 Location. Where located on the front of the building and where projecting beyond the building line, the lowest landing shall be not less than 8 feet (2438 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 be not less than 12 feet (3658 mm).

[S] 804.4.1.2.2 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 V construction. Walkways and railings located over or supported by combustible roofs in buildings of Types III and IV construction are permitted to be of wood not less than nominal 2 inches (51 mm) thick.~~))

804.4.1.2.3 Dimensions. Stairways shall be not less than 22 inches (559 mm) wide with risers not more than, and treads not less than, 8 inches (203 mm). Landings at the foot of stairways shall be not less than 40 inches (1016 mm) wide by 36 inches (914 mm) long and located not more than 8 inches (203 mm) below the door.

[S] 804.4.1.2.4 Opening protectives. Doors and windows along the fire escape shall be protected with 3/4-hour opening protectives.

804.4.2 Mezzanines. Mezzanines in the *work area* and with an occupant load of more than 50 or in which the travel distance to an exit exceeds 75 feet (22 860 mm) shall have access to not fewer than two independent means of egress.

Exception: Two independent means of egress are not required where the travel distance to an exit does not exceed 100 feet (30 480 mm) and the building is protected throughout with an automatic sprinkler system.

804.4.3 Main entrance—Group A. Buildings of Group A with an occupant load of 300 or more shall be provided with a main entrance capable of serving as the main exit with an egress capacity of not less than one-half of the total occupant load. The remaining exits shall be capable of providing one-half of the total required exit capacity.

Exception: Where a main exit is not well defined or where multiple main exits are provided, exits shall be permitted to be distributed around the perimeter of the building provided that the total width of egress is not less than 100 percent of the required width.

804.5 Egress doorways. Egress doorways in any *work area* shall comply with Sections 804.5.1 through 804.5.5.

804.5.1 Two egress doorways required. Work areas shall be provided with two egress doorways in accordance with the requirements of Sections 804.5.1.1 and 804.5.1.2.

804.5.1.1 Occupant load and travel distance. In any *work area*, all rooms and spaces having an occupant load greater than 50 or in which the travel distance to an exit exceeds 75 feet (22 860 mm) shall have not fewer than two egress doorways.

Exceptions:

1. Storage rooms having a maximum occupant load of 10.
2. Where the *work area* is served by a single exit in accordance with Section 804.4.1.1.

804.12.1 Minimum requirement. Every open portion of a stairway, landing, or balcony that is more than 30 inches (762 mm) above the floor or grade below and is not provided with guards, or those portions in which existing guards are judged to be in danger of collapsing, shall be provided with guards.

804.12.2 Design. Guards required in accordance with Section 804.12.1 shall be designed and installed in accordance with the *International Building Code*.

SECTION 805
STRUCTURAL

[S][BS] 805.1 General. Structural elements and systems within buildings undergoing Level 2 *alterations* shall comply with ((~~this section~~)) Section 304. *

[S] ((~~SECTION 806~~
~~ELECTRICAL~~

~~**806.1 New installations.** Newly installed electrical equipment and wiring relating to work done in any *work area* shall comply with all applicable requirements of NFPA 70 except as provided for in Section 806.4.~~

~~**806.2 Existing installations.** Existing wiring in all *work areas* in Group A-1, A-2, A-5, H and I occupancies shall be upgraded to meet the materials and methods requirements of Chapter 7.~~

~~**806.3 Health care facilities.** In Group I-2 *facilities*, ambulatory care *facilities* and outpatient clinics, any added portion of an existing electrical system shall be required to meet installation and equipment requirements in NFPA 99.~~

~~**806.4 Residential occupancies.** In Group R-2, R-3 and R-4 occupancies and buildings regulated by the *International Residential Code*, the requirements of Sections 806.4.1 through 806.4.7 shall be applicable only to *work areas* located within a dwelling unit.~~

~~**806.4.1 Enclosed areas.** Enclosed areas, other than closets, kitchens, basements, garages, hallways, laundry areas, utility areas, storage areas and bathrooms shall have not fewer than two duplex receptacle outlets or one duplex receptacle outlet and one ceiling or wall-type lighting outlet.~~

~~**806.4.2 Kitchens.** Kitchen areas shall have not fewer than two duplex receptacle outlets.~~

~~**806.4.3 Laundry areas.** Laundry areas shall have not fewer than one duplex receptacle outlet located near the laundry equipment and installed on an independent circuit.~~

~~**806.4.4 Ground fault circuit interruption.** Newly installed receptacle outlets shall be provided with ground fault circuit interruption as required by NFPA 70.~~

~~**806.4.5 Minimum lighting outlets.** Not fewer than one lighting outlet shall be provided in every bathroom, hallway, stairway, attached garage and detached garage with electric power, and to illuminate outdoor entrances and exits.~~

~~**806.4.6 Utility rooms and basements.** Not fewer than one lighting outlet shall be provided in utility rooms and basements where such spaces are used for storage or contain equipment requiring service.~~

~~**806.4.7 Clearance for equipment.** Clearance for electrical service equipment shall be provided in accordance with NFPA 70.~~))

SECTION 807
MECHANICAL

[S] ((~~807.1 Reconfigured or converted spaces.~~ ~~Reconfigured spaces intended for occupancy and 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 807.2.~~))

807.1 Mechanical systems. Mechanical systems shall comply with the *International Mechanical Code*.

[S] ((~~807.2 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 62.1.~~))

[S] ((~~807.3 Local exhaust.~~ ~~Newly introduced devices, equipment or operations that produce airborne particulate matter, odors, fumes, vapor, combustion products, gaseous contaminants, pathogenic and allergenic organisms, and microbial contaminants~~

~~in such quantities as to affect adversely or impair health or cause discomfort to occupants shall be provided with local exhaust.~~))

SECTION 808
PLUMBING

* **808.1 Health care facilities.** In Group I-2 *facilities*, ambulatory care *facilities* and outpatient clinics, any added portion of an existing medical gas system shall be required to meet installation and equipment requirements in NFPA 99.

[S] ((~~SECTION 809~~
~~ENERGY CONSERVATION~~

~~**809.1 Minimum requirements.** Level 2 *alterations* to *existing buildings* or structures are permitted without requiring the entire building or structure to 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.~~))

CHAPTER 9
ALTERATIONS—LEVEL 3

User note:

***About this chapter**: Chapter 9 provides the technical requirements for those existing buildings that undergo Level 3 alterations. The purpose of this chapter is to provide detailed requirements and provisions to identify the required improvements in the existing building elements, building spaces and building structural system. This chapter is distinguished from Chapters 7 and 8 by involving alterations that cover 50 percent or more of the aggregate area of the building. In contrast, Level 1 alterations do not involve space reconfiguration, and Level 2 alterations involve extensive space reconfiguration that does not exceed 50 percent of the building area. Depending on the nature of alteration work, its location within the building, and whether it encompasses one or more tenants, improvements and upgrades could be required for the open floor penetrations, sprinkler system or the installation of additional means of egress such as stairs or fire escapes. At times and under certain situations, this chapter also is intended to improve the safety of certain building features beyond the work area and in other parts of the building where no alteration work might be taking place.*

SECTION 901
GENERAL

901.1 Scope. Level 3 *alterations* as described in Section 604 shall comply with the requirements of this chapter.

901.2 Compliance. In addition to the provisions of this chapter, work shall comply with all of the requirements of Chapters 7 and 8. The requirements of Sections 802, 803, 804 and 805 shall apply within all *work areas* whether or not they include exits and corridors shared by more than one tenant and regardless of the occupant load.

Exception: Buildings in which the reconfiguration of space affecting exits or shared egress access is exclusively the result of compliance with the accessibility requirements of Section 306.7.1 shall not be required to comply with this chapter.

SECTION 902
SPECIAL USE AND OCCUPANCY

[S] 902.1 High-rise buildings. Any building having occupied floors more than 75 feet (22 860 mm) above the lowest level of fire department vehicle access shall comply with the requirements of ((~~Sections~~)) Section 902.1.1. ((~~and 902.1.2.~~))

902.1.1 Recirculating air or exhaust systems. Where a floor is served by a recirculating air or exhaust system with a capacity greater than 15,000 cubic feet per minute (701 m^3/s), that system shall be equipped with *approved* smoke and heat detection devices installed in accordance with the *International Mechanical Code*.

((~~**902.1.2 Elevators.** Where there is an elevator or elevators for public use, not fewer than one elevator serving the *work area* shall comply with this section. 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/CSA B44.1.~~))

[S] 902.2 Boiler and furnace equipment rooms. Boiler and furnace equipment rooms adjacent to or within Group I-1, I-2, I-4, R-1, and R-2 ((~~and R-4~~)) occupancies shall be enclosed by 1-hour fire-resistance-rated construction.

Exceptions:

1. Steam boiler equipment operating at pressures of 15 pounds per square inch gauge (psig) (103.4 kPa) or less is not required to be enclosed.
2. Hot water boilers operating at pressures of 170 psig (1171 kPa) or less are not required to be enclosed.
3. Furnace and boiler equipment with 400,000 British thermal units (Btu) (4.22 × 108 J) per hour input rating or less is not required to be enclosed.
4. Furnace rooms protected with an automatic sprinkler system are not required to be enclosed.

SECTION 903
BUILDING ELEMENTS AND MATERIALS

903.1 Existing shafts and vertical openings. Existing stairways that are part of the means of egress shall be enclosed in accordance with Section 802.2.1 from the highest *work area* floor to, and including, the level of exit discharge and all floors below.

903.2 Fire partitions in Group R-3. Fire separation in Group R-3 occupancies shall be in accordance with Section 903.2.1.

[S] 903.2.1 Separation required. Where the *work area* is in any attached dwelling unit in Group R-3 or any multiple single-family dwelling (townhouse), walls separating the dwelling units that are not continuous from the foundation to the underside of the roof sheathing shall be constructed to provide a continuous fire separation using construction materials consistent with the existing wall or complying with the requirements for new structures. Work shall be performed on the side of the dwelling unit wall that is part of the *work area*.

Exception: Where *alterations* ((~~or *repairs*~~)) do not result in the removal of wall or ceiling finishes exposing the structure, walls are not required to be continuous through concealed floor spaces.

903.3 Interior finish. Interior finish in exits serving the *work area* shall comply with Section 802.4 between the highest floor on which there is a *work area* to the floor of exit discharge.

903.4 Enhanced classroom acoustics. In Group E occupancies, where the *work area* is a Level 3 alteration, enhanced classroom acoustics shall be provided in all classrooms with a volume of 20,000 cubic feet (565 m^3) or less. Enhanced classroom acoustics shall comply with the reverberation time in Section 808 of ICC A117.1.

SECTION 904
FIRE PROTECTION

904.1 Automatic sprinkler systems. An automatic sprinkler system shall be provided in a *work area* where required by Section 803.2 or this section.

904.1.1 High-rise buildings. An automatic sprinkler system shall be provided in *work areas* where the high-rise building has a sufficient municipal water supply for the design and installation of an automatic sprinkler system at the site.

904.1.2 Rubbish and linen chutes. Rubbish and linen chutes located in the *work area* shall be provided with automatic sprinkler system protection or an *approved* automatic fire-extinguishing system where protection of the rubbish and linen chute would be required under the provisions of the *International Building Code* for new construction.

904.1.3 Upholstered furniture or mattresses. *Work areas* shall be provided with an automatic sprinkler system in accordance with the *International Building Code* where any of the following conditions exist:

1. A Group F-1 occupancy used for the manufacture of upholstered furniture or mattresses exceeds 2,500 square feet (232 m^2).
2. A Group M occupancy used for the display and sale of upholstered furniture or mattresses exceeds 5,000 square feet (464 m^2).
3. A Group S-1 occupancy used for the storage of upholstered furniture or mattresses exceeds 2,500 square feet (232 m^2).

[S] 904.1.4 Groups A, B, E, F-1, H, I-1, I-3, I-4, M, R-1, R-2, R-4, S-1 and S-2. In buildings with occupancies in Groups A, B, E, F-1, H, I-1, I-3, I-4, M, R-1, R-2, R-4, S-1 and S-2 work areas 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 building site has sufficient municipal water supply for design and installation of an automatic sprinkler system.~~

~~**Exception:** If the building site does not have sufficient municipal water supply for design of an automatic sprinkler system, work areas shall be protected by an automatic smoke detection system throughout all occupiable spaces other than sleeping units or individual dwelling units that activates the occupant notification system in accordance with Sections 907.4, 907.5 and 907.6 of the *International Building Code*.~~))

[S] 904.1.5 Group I-2. In Group I-2 occupancies, an automatic sprinkler system installed in accordance with ((~~Section 903.3.1.1~~)) Chapter 11 of the *International Fire Code* ((~~shall be provided in the following:~~

~~1. In Group I-2, Condition 1, throughout the *work area*.~~

~~2. In Group I-2, Condition 2, throughout the *work area* where the *work area* is 50 percent or less of the smoke compartment.~~

~~3. In Group I-2, Condition 2, throughout the smoke compartment in which the work occurs where the *work area* exceeds 50 percent of the smoke compartment.~~))

[S] 904.1.6 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 site has a sufficient municipal water supply for the design and installation of an automatic sprinkler system.~~))

904.1.7 Other required automatic sprinkler systems. In buildings and areas listed in Table 903.2.11.6 of the *International Building Code*, *work areas* shall be provided with an automatic sprinkler system under the following conditions:

1. The *work area* is required to be provided with an automatic sprinkler system in accordance with the *International Building Code* applicable to new construction.
2. The building site has sufficient municipal water supply for design and installation of an automatic sprinkler system.

904.2 Fire alarm and detection systems. Fire alarm and detection shall be provided in accordance with Section 907 of the *International Building Code* as required for new construction.

904.2.1 Manual fire alarm systems. Where required by the *International Building Code*, a manual fire alarm system shall be provided throughout 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. Alarm-initiating and notification appliances shall not be required to be installed in tenant spaces outside of the *work area*.
2. 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.

904.2.2 Automatic fire detection. Where required by the *International Building Code* for new buildings, automatic fire detection systems shall be provided throughout the *work area*.

SECTION 905
MEANS OF EGRESS

905.1 General. The means of egress shall comply with the requirements of Section 804 except as specifically required in Sections 905.2 and 905.3.

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

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

905.4 Two-way communications systems. In buildings with elevator service, a two-way communication system shall be provided where required by Section 1009.8 of the *International Building Code*.

SECTION 906
STRUCTURAL

[S][BS] 906.1 General. Where buildings are undergoing Level 3 *alterations*, the provisions of ((~~this section~~)) Section 304 shall apply.

[S] ((~~[BS] 906.3 Seismic Design Category F.~~ ~~Where the building is assigned to Seismic Design Category F, the structure of the altered building shall meet the requirements of Sections 1609 and 1613 of the *International Building Code*. Reduced seismic forces shall be permitted.~~)) *

[S] ((~~[BS] 906.4 Anchorage for concrete and masonry buildings.~~ ~~For any building assigned to Seismic Design Category D, E or F with a structural system that includes concrete or reinforced masonry walls with a flexible roof diaphragm, the *alteration* work shall include installation of wall anchors at the roof line of all subject buildings and at the floor lines of unreinforced masonry buildings unless an evaluation demonstrates compliance of existing wall anchorage. Reduced seismic forces shall be permitted.~~)) *

[S] ((~~[BS] 906.6 Bracing for unreinforced masonry parapets.~~ ~~Parapets constructed of unreinforced masonry in buildings assigned to Seismic Design Category C, D, E or F shall have bracing installed as needed to resist the reduced *International Building Code* level seismic forces in accordance with Section 304.3, unless an evaluation demonstrates compliance of such items. Use of reduced seismic forces shall be permitted.~~))

*

[S] ((~~SECTION 907~~
~~ENERGY CONSERVATION~~

~~907.1 Minimum requirements.~~ ~~Level 3 *alterations* to *existing buildings* or structures are permitted without requiring the entire building or structure to 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.~~))

CHAPTER 10
CHANGE OF OCCUPANCY

User note:

***About this chapter**: The purpose of this chapter is to provide regulations for the circumstances where an existing building is subject to a change of occupancy or a change of occupancy classification. A change of occupancy is not to be confused with a change of occupancy classification. The* International Building Code® *defines different occupancy classifications in Chapter 3 and special occupancy requirements in Chapter 4. Within specific occupancy classifications there can be many different types of actual activities that can take place. For instance, a Group A-3 occupancy classification deals with a wide variation of different types of activities, including bowling alleys and courtrooms, indoor tennis courts and dance halls. When a facility changes use from, for example, a bowling alley to a dance hall, the occupancy classification remains A-3, but the different uses could lead to drastically different code requirements. Therefore, this chapter deals with the special circumstances that are associated with a change in the use of a building within the same occupancy classification as well as a change of occupancy classification.*

SECTION 1001
GENERAL

[S] 1001.1 Scope. The provisions of this chapter shall apply where a *change of occupancy* occurs, as defined in Section 202.

Note: The following illustrate how change of occupancy is interpreted:

- Change of occupancy classification is a change in the letter designation. An example is a change from B occupancy to R occupancy.
- Change in occupancy group is change in the number designation within an occupancy classification. An example is a change from group R-1 occupancy to R-2 occupancy.
- Change of use is a change in the subcategory within the occupancy group. An example is a change from R-2 apartment to R-2 boarding house.

When "change of occupancy" is italicized in this chapter, it is a global term meant to describe the act of changing the classification, group or use of a building or portion thereof. The terms "change in occupancy group," "change in occupancy classification" or "change in use" where the phrase "change in occupancy" is not italicized have the meanings described above.

Note: *Changes of occupancy* that are substantial alterations as determined by Section 311.1.1 are required to comply with Section 311.

[S] 1001.2 ((~~Certificate~~)) Change of occupancy. A *change of occupancy* or a *change of occupancy* within a space where there is a different fire protection system threshold requirement in Chapter 9 of the *International Building Code* shall not be made to any structure 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 of occupancy* have been met.~~))

[S] 1001.2.1 Change of use. Any work undertaken in connection with a change in use that does not involve a *change of occupancy* classification or a change to another group within an occupancy classification shall conform to the applicable requirements for the work as classified in Chapter 6 and to the requirements of Sections 1002 through 1010.

Exception: As modified in Section ((~~1204~~)) 310 for ((~~*historic buildings*~~)) *landmarks*.

[S] 1001.2.2 Change of occupancy classification or group. Where the occupancy classification or group of a building changes, the provisions of Sections 1002 through 1011 shall apply. This includes a change of occupancy classification and a change to another group within an occupancy classification.

1001.2.2.1 Partial change of occupancy. Where the occupancy classification or group of a portion of an *existing building* is changed, Section 1011 shall apply.

[S] 1001.3 Certificate of occupancy required. A certificate of occupancy shall be issued where a *change of occupancy* occurs that results in a different occupancy classification or group as determined by the *International Building Code*.

SECTION 1002
SPECIAL USE AND OCCUPANCY

1002.1 Compliance with the building code. Where an *existing building* or part of an *existing building* undergoes a *change of occupancy* to one of the special use or occupancy categories as described in Chapter 4 in the *International Building Code*, the

building shall comply with all of the requirements of Chapter 4 of the *International Building Code* applicable to the special use or occupancy.

1002.2 Incidental uses. Where a portion of a building undergoes a *change of occupancy* to one of the incidental uses listed in Table 509.1 of the *International Building Code*, the incidental use shall comply with Section 509 of the *International Building Code* applicable to the incidental use.

[W] 1002.3 Change of occupancy in health care. Where a *change of occupancy* occurs to a Group I-2 or I-1 *facility*, the *work area* with the *change of occupancy* shall comply with the *International Building Code*.

The *International Building Code* shall apply to Group I-1, Condition 2, for licensure as an assisted living facility under chapter 388-78A WAC or residential treatment facility under chapter 246-337 WAC.

Exception: A change in use or occupancy in the following cases shall not be required to meet the *International Building Code*:

1. Group I-2, Condition 2 to Group I-2, Condition 1.
2. Group I-2 to ambulatory health care.
3. Group I-2 to Group I-1.
4. Group I-1, Condition 2 to Group I-1, Condition 1.

1002.4 Storage. In Group I-2 occupancies, equipped throughout with an automatic sprinkler in accordance with Section 903.3.1.1 of the *International Building Code*, where a room 250 square feet (23.2 m^2) or less undergoes a change in occupancy to a storage room, the room shall be separated from the remainder of the building by construction capable of resisting the passage of smoke in accordance with Section 509.4.2 of the *International Building Code*.

SECTION 1003
BUILDING ELEMENTS AND MATERIALS

1003.1 General. Building elements and materials in portions of buildings undergoing a change of occupancy classification shall comply with Section 1011.

SECTION 1004
FIRE PROTECTION

1004.1 General. Fire protection requirements of Section 1011 shall apply where a building or portions thereof undergo a *change of occupancy* classification or where there is a change of occupancy within a space where there is a different fire protection system threshold requirement in Chapter 9 of the *International Building Code*.

SECTION 1005
MEANS OF EGRESS

1005.1 General. Means of egress in portions of buildings undergoing a change of occupancy classification shall comply with Section 1011.

SECTION 1006
STRUCTURAL

[S] ((~~[BS] 1006.1 Live loads.~~ ~~Structural elements carrying tributary live loads from an area with a *change of occupancy* shall satisfy the requirements of Section 1607 of the *International Building Code*. Design live loads for areas of new occupancy shall be based on Section 1607 of the *International Building Code*. Design live loads for other areas shall be permitted to use previously *approved* design live loads.~~

~~**Exception:** Structural elements whose demand-capacity ratio considering the *change of occupancy* is not more than 5 percent greater than the demand-capacity ratio based on previously *approved* live loads.~~))

[S] 1006.1 Structural. Buildings or portions thereof subject to a *change of occupancy* shall comply with Section 304.2.

[S] ((~~[BS] 1006.2 Snow and wind loads.~~ ~~Where a *change of occupancy* results in a structure being assigned to a higher *risk category*, the structure shall satisfy the requirements of Sections 1608 and 1609 of the *International Building Code* for the new risk category.~~

~~**Exception:** Where the area of the new occupancy is less than 10 percent of the building area. The cumulative effect of occupancy changes over time shall be considered.~~))

[S] ((~~[BS] 1006.3 Seismic loads.~~ ~~Where a *change of occupancy* results in a building being assigned to a higher *risk category*, or where the change is from a Group S or Group U occupancy to any occupancy other than Group S or Group U, the building shall satisfy the requirements of Section 1613 of the *International Building Code* for the new *risk category* using full seismic forces.~~

~~Exceptions:~~

1. ~~Where a *change of use* results in a building being reclassified from *Risk Category* I or II to *Risk Category* III and the seismic coefficient, S_{DS}, is less than 0.33, compliance with this section is not required.~~
2. ~~Where the area of the new occupancy is less than 10 percent of the building area, the occupancy is not changing from a Group S or Group U occupancy, and the new occupancy is not assigned to *Risk Category* IV, compliance with this section is not required. The cumulative effect of occupancy changes over time shall be considered.~~
3. ~~Unreinforced masonry bearing wall buildings assigned to *Risk Category* III and to Seismic Design Category A or B shall be permitted to use Appendix Chapter A1 of this code.~~
4. ~~Where the change is from a Group S or Group U occupancy and there is no change of *risk category*, use of reduced seismic forces shall be permitted.~~))

[S] ((~~[BS] 1006.4 Access to Risk Category IV.~~ ~~Any structure that provides operational access to an adjacent structure assigned to *Risk Category* IV as the result of a change of occupancy shall itself satisfy the requirements of Sections 1608, 1609 and 1613 of the *International Building Code*. For compliance with Section 1613 of the *International Building Code*, the full seismic forces shall be used. Where operational access to *Risk Category* IV is less than 10 feet (3048 mm) from either an interior lot line or from another structure, access protection from potential falling debris shall be provided.~~))

[S] ((~~SECTION 1007~~ ~~ELECTRICAL~~

~~1007.1 Special occupancies.~~ ~~Where the occupancy of an *existing building* or part of an *existing building* is changed to one of the following special occupancies as described in NFPA 70, the electrical wiring and equipment of the building or portion thereof that contains the proposed occupancy shall comply with the applicable requirements of NFPA 70. Health care *facilities*, including Group I-2, ambulatory health care *facilities* and outpatient clinics, shall also comply with the applicable requirements of NFPA 99:~~

1. ~~Hazardous locations.~~
2. ~~Commercial garages, repair and storage.~~
3. ~~Aircraft hangars.~~
4. ~~Gasoline dispensing and service stations.~~
5. ~~Bulk storage plants.~~
6. ~~Spray application, dipping and coating processes.~~
7. ~~Health care *facilities*, including Group I-2, ambulatory health care *facilities* and outpatient clinics.~~
8. ~~Places of assembly.~~
9. ~~Theaters, audience areas of motion picture and television studios, and similar locations.~~
10. ~~Motion picture and television studios and similar locations.~~
11. ~~Motion picture projectors.~~
12. ~~Agricultural buildings.~~

~~1007.2 Unsafe conditions.~~ ~~Where the occupancy of an *existing building* or part of an *existing building* is changed, all *unsafe* conditions shall be corrected without requiring that all parts of the electrical system comply with NFPA 70.~~

~~1007.3 Service upgrade.~~ ~~Where the occupancy of an *existing building* or part of an *existing building* is changed, electrical service shall be upgraded to meet the requirements of NFPA 70 for the new occupancy.~~

~~1007.4 Number of electrical outlets.~~ ~~Where the occupancy of an *existing building* or part of an *existing building* is changed, the number of electrical outlets shall comply with NFPA 70 for the new occupancy.~~))

SECTION 1008
MECHANICAL

[S] 1008.1 Mechanical requirements. ((~~Where the occupancy of an *existing building* or part of an *existing building* is changed such that the new occupancy is subject to different kitchen exhaust requirements or to increased mechanical ventilation requirements in accordance with the *International Mechanical Code*, the new occupancy shall comply with the respective~~

~~*International Mechanical Code* provisions.~~)) Mechanical equipment and systems shall comply with the *International Mechanical Code*.

SECTION 1009
PLUMBING

[W][S] 1009.1 Increased demand. Where ((~~the~~)) a *change of occupancy* ((~~of~~)) in an *existing building* or part of an *existing building* ((~~is changed such that the~~)) results in a new occupancy that is subject to increased or different plumbing fixture requirements or to increased water supply requirements in accordance with the *International Building Code and* ((~~*International*~~)) *Uniform Plumbing Code*, the new occupancy shall comply with the ((~~intent of the~~)) respective *International Building Code and* ((~~*International*~~)) *Uniform Plumbing Code* provisions.

** **Exception:** Only 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*~~)) *Building Code* based on the increased occupant load.

[W] 1009.2 Food-handling occupancies. If the new occupancy is a food-handling establishment, all existing sanitary waste lines above the food or drink preparation or storage areas shall be panned or otherwise protected to prevent leaking pipes or condensation on pipes from contaminating food or drink. New drainage lines shall not be installed above such areas and shall be protected in accordance with the ((~~*International*~~)) *Uniform Plumbing Code*.

[W] 1009.3 Interceptor required. If the new occupancy will produce grease or oil-laden wastes, interceptors shall be provided as required in the ((~~*International*~~)) *Uniform Plumbing Code*.

1009.4 Chemical wastes. If the new occupancy will produce chemical wastes, the following shall apply:

1. If the existing piping is not compatible with the chemical waste, the waste shall be neutralized prior to entering the drainage system or the piping shall be changed to a compatible material.
2. Chemical waste shall not discharge to a public sewer system without the approval of the sewage authority.

[W] 1009.5 Group I-2. If the occupancy group is changed to Group I-2, the plumbing system ((~~and medical gas system~~)) shall comply with the applicable requirements of the ((~~*International*~~)) *Uniform Plumbing Code*.

SECTION 1010
OTHER REQUIREMENTS

[S] 1010.1 Light and ventilation. Light and ventilation shall comply with the requirements of the *International Building Code* and *International Mechanical Code* for the new occupancy.

SECTION 1011
CHANGE OF OCCUPANCY ((~~CLASSIFICATION~~))

1011.1 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 or where there is a *change of occupancy* within a space where there is a different fire protection system threshold requirement in Chapter 9 of the *International Building Code*. Such buildings shall also comply with Sections 1002 through 1010 of this code.

1011.2 Fire protection systems. Fire protection systems shall be provided in accordance with Sections 1011.2.1 and 1011.2.2.

[S] 1011.2.1 Fire sprinkler system. Where a change in occupancy classification occurs or where there is a *change of occupancy* within a space where there is a different fire protection system threshold requirement in Chapter 9 of the *International Building Code* 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.* ((~~The installation of the automatic sprinkler system shall be required within the area of the *change of occupancy* and areas of the building not separated horizontally and vertically from the change of occupancy by one of the following:~~

1. ~~Nonrated permanent partition and horizontal assemblies.~~
2. ~~Fire partition.~~
3. ~~Smoke partition.~~
4. ~~Smoke barrier.~~
5. ~~Fire barrier.~~
6. ~~Fire wall.~~

~~**Exceptions:**~~

~~1. An automatic sprinkler system shall not be required in a one- or two-family dwelling constructed in accordance with the *International Residential Code*.~~

~~2. Automatic sprinkler system shall not be required in a townhouse constructed in accordance with the *International Residential Code*.~~

~~3. The townhouse shall be separated from adjoining units in accordance with Section R302.2 of the *International Residential Code*.~~))

Exception: Subject to the approval of the code official, an automatic fire sprinkler system is not required in dwelling units according to Items 4.1 through 4.6 below. This exception is permitted to be used for the *change of occupancy* for one dwelling unit after October 29, 1990.

1. The occupancy of one unit is permitted to be changed to a dwelling unit without an automatic sprinkler system unless sprinklers are otherwise required by this chapter. If more than one unit is changed, the new units shall be equipped with a sprinkler system.
2. In buildings that do not comply with the provisions of this code for number of stories, allowable area, height or type of construction before the occupancy of the unit is changed, an automatic sprinkler system shall be provided in the new unit. The change of occupancy shall not be allowed if it increases the nonconformity.
3. In buildings undergoing *substantial alteration*, an automatic sprinkler system shall be installed where required by this code for new construction.
4. The occupancy of one unit is permitted to be changed to a dwelling unit in an existing duplex without an automatic sprinkler system where both of the following conditions are met:
   - 4.1. The project is considered a *substantial alteration* only because of the change in occupancy; and
   - 4.2. The building complies with the requirements for building height and number of stories for a Group R-2 occupancy.
5. Where the occupancy of one unit is changed to a dwelling unit in an existing duplex, sprinklers are required in the new unit and not in the existing units where all of the following conditions are met:
   - 5.1. The existing duplex does not comply with the requirements for building height and story count for a Group R-2 occupancy;
   - 5.2. The project is considered a *substantial alteration* only because of the change in occupancy;
   - 5.3. The new unit is constructed as an addition to the duplex;
   - 5.4. The new unit is separated from the existing duplex by a fire wall; and
   - 5.5. The addition by itself complies with the requirements for a Group R-2 occupancy.
6. A sprinkler system is not required when a Group U occupancy that is accessory to a Group R-3 occupancy is converted to a dwelling unit.

1011.2.2 Fire alarm and detection system. Where a change in occupancy classification occurs or where there is a *change of occupancy* within a space where there is a different fire protection system threshold requirement in Chapter 9 of the *International Building Code* 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 in accordance with Section 907 of the *International Building Code* as required for new construction.

1011.3 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.

1011.4 Enhanced classroom acoustics. In Group E occupancies, where the *work area* is a Level 3 *alteration*, enhanced classroom acoustics shall be provided in all classrooms with a volume of 20,000 cubic feet (565 m^3) or less. Enhanced classroom acoustics shall comply with the reverberation time in Section 808 of ICC A117.1.

1011.5 Means of egress, general. Hazard categories in regard to life safety and means of egress shall be in accordance with Table 1011.5.

1011.6 Heights and areas. Hazard categories in regard to height and area shall be in accordance with Table 1011.6.

TABLE 1011.6
HEIGHTS AND AREAS HAZARD CATEGORIES

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

[S] 1011.6.1 Height and area for change to a higher-hazard category. Where a change of occupancy classification is made to a higher-hazard category as shown in Table 1011.6, heights and areas of buildings and structures shall comply with the requirements of Chapter 5 of the *International Building Code* for the new occupancy classification.

Exception: For high-rise buildings constructed in compliance with a previously issued permit, the type of construction reduction specified in Section 403.2.1 of the *International Building Code* is permitted. ((~~This shall include the reduction for columns.~~)) The high-rise building is required to be equipped throughout with an automatic sprinkler system in accordance with Section 903.3.1.1 of the *International Building Code*.

1011.6.1.1 Fire wall alternative. In other than Groups H, F-1 and S-1, fire barriers and horizontal assemblies constructed in accordance with Sections 707 and 711, respectively, of the *International Building Code* shall be permitted to be used in lieu of fire walls to subdivide the building into separate buildings for the purpose of complying with the area limitations required for the new occupancy where all of the following conditions are met:

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

Exception: Where horizontal assemblies are used to limit the maximum allowable area, the required fire-resistance rating of the horizontal assemblies shall be permitted to be reduced by 1 hour provided that the height and number of stories increases allowed for an automatic sprinkler system by Section 504 of the *International Building Code* are not used for the buildings.

1011.6.2 Height and area for change to an equal or lesser-hazard category. Where a change of occupancy classification is made to an equal or lesser-hazard category as shown in Table 1011.6, the height and area of the *existing building* shall be deemed acceptable.

1011.6.3 Fire barriers. Where a *change of occupancy* classification is made to a higher-hazard category as shown in Table 1011.6, fire barriers in separated mixed use buildings shall comply with the fire-resistance requirements of the *International Building Code*.

Exception: Where the fire barriers are required to have a 1-hour fire-resistance rating, existing wood lath and plaster in good condition or existing 1/2-inch-thick (12.7 mm) gypsum wallboard shall be permitted.

1011.7 Exterior wall fire-resistance ratings. Hazard categories in regard to fire-resistance ratings of exterior walls shall be in accordance with Table 1011.7.

TABLE 1011.7
EXPOSURE OF EXTERIOR WALLS HAZARD CATEGORIES

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

1011.7.1 Exterior wall rating for change of occupancy classification to a higher-hazard category. Where a change of occupancy classification is made to a higher hazard category as shown in Table 1011.7, exterior walls shall have fire resistance and exterior opening protectives as required by the *International Building Code*.

CHAPTER 11
ADDITIONS

User note:

About this chapter: *Chapter 11 provides the requirements for additions, which correlate to the code requirements for new construction. There are, however, some exceptions that are specifically stated within this chapter. An "Addition" is defined in Chapter 2 as "an extension or increase in the floor area, number of stories or height of a building or structure." Chapter 11 contains the minimum requirements for an addition that is not separated from the existing building by a fire wall.*

SECTION 1101
GENERAL

[W] 1101.1 Scope. An *addition* to a building or structure shall comply with the International Codes and *Uniform Plumbing Code* as adopted for new construction 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. Where an *addition* impacts the *existing building* or structure, that portion shall comply with this code.

1101.2 Creation or extension of nonconformity. An *addition* shall not create or extend any nonconformity in the *existing building* to which the *addition* is being made with regard to accessibility, structural strength, fire safety, means of egress or the capacity of mechanical, plumbing or electrical systems.

[S] 1101.3 Other work. Any ((~~*repair* or~~)) *alteration* work within an *existing building* to which an *addition* is being made shall comply with the applicable requirements for the work as classified in Chapter 6.

1101.4 Enhanced classroom acoustics. In Group E occupancies, enhanced classroom acoustics shall be provided in all classrooms in the *addition* with a volume of 20,000 cubic feet (565 m^3) or less. Enhanced classroom acoustics shall comply with the reverberation time in Section 808 of ICC A117.1.

SECTION 1102
HEIGHTS AND AREAS

1102.1 Height limitations. An *addition* shall not increase the height of an *existing building* beyond that permitted under the applicable provisions of Chapter 5 of the *International Building Code* for new buildings.

1102.2 Area limitations. An *addition* shall not increase the area of an *existing building* beyond that permitted under the applicable provisions of Chapter 5 of the *International Building Code* for new buildings unless fire separation as required by the *International Building Code* is provided.

Exception: In-filling of floor openings and nonoccupiable appendages such as elevator and exit stairway shafts shall be permitted beyond that permitted by the *International Building Code*.

1102.3 Fire protection systems. Existing fire areas increased by the *addition* shall comply with Chapter 9 of the *International Building Code*.

SECTION 1103
STRUCTURAL

[S] 1103.1 Structural. *Additions* to existing buildings or structures are new construction and shall comply with Section 304.3. *

[BS] ((~~1103.3~~)) 1103.2 Flood hazard areas. *Additions* and *foundations* in *flood hazard areas* shall comply with ((~~the following requirements:~~)) Section 314.

((~~1. For horizontal *additions* that are structurally interconnected to the *existing building*:~~

~~1.1. If the *addition* and all other proposed work, when combined, constitute *substantial improvement*, the *existing building* and the *addition* shall comply with Section 1612 of the *International Building Code*, or Section R322 of the *International Residential Code*, as applicable.~~

~~1.2. If the *addition* constitutes *substantial improvement*, the *existing building* and the *addition* shall comply with Section 1612 of the *International Building Code*, or Section R322 of the *International Residential Code*, as applicable.~~

ADDITIONS

~~2. For horizontal *additions* that are not structurally interconnected to the *existing building*:~~

~~2.1. The *addition* shall comply with Section 1612 of the *International Building Code*, or Section R322 of the *International Residential Code*, as applicable.~~

~~2.2. If the *addition* and all other proposed work, when combined, constitute *substantial improvement*, the *existing building* and the *addition* shall comply with Section 1612 of the *International Building Code*, or Section R322 of the *International Residential Code*, as applicable.~~

~~3. For vertical *additions* and all other proposed work that, when combined, constitute *substantial improvement*, the *existing building* shall comply with Section 1612 of the *International Building Code*, or Section R322 of the *International Residential Code*, as applicable.~~

~~4. For a raised or extended foundation, if the foundation work and all other proposed work, when combined, constitute *substantial improvement*, the *existing building* shall comply with Section 1612 of the *International Building Code*, or Section R322 of the *International Residential Code*, as applicable.~~

~~5. For a new foundation or replacement foundation, the foundation shall comply with Section 1612 of the *International Building Code*, or Section R322 of the *International Residential Code*, as applicable.~~))

* **[S] ((~~SECTION 1104~~**
~~ENERGY CONSERVATION~~

~~**1104.1 Minimum requirements.** *Additions* to *existing buildings* shall conform to the energy requirements of the *International Energy Conservation Code* or *International Residential Code* as they relate to new construction.~~))

[S] SECTION 1104
ADDITION OF DWELLING UNITS

[S] 1104.1 Automatic sprinkler systems. Automatic sprinkler systems are required when new dwelling units are added to buildings according to Items 1 through 5 below. This provision is permitted to be used to add one unit after October 29, 1990.

1. One unit is permitted to be added to a residential or commercial building without an automatic sprinkler system unless sprinklers are otherwise required by this section. If more than one unit is added, the new units shall be equipped with a sprinkler system.
2. In buildings that do not comply with the provisions of this code for number of stories, allowable area, height or type of construction before the unit is added, an automatic sprinkler system shall be provided in the new unit. The addition of the new unit shall not be allowed if it increases the nonconformity.
3. In buildings undergoing *substantial alteration*, an automatic sprinkler system shall be installed where required by this code for new construction.
4. One unit is permitted to be added to an existing duplex without an automatic sprinkler system where both of the following conditions are met:
   4.1. The project is considered a *substantial alteration* only because of the change in occupancy; and
   4.2. The building complies with the requirements for building height and number of stories for a Group R-2 occupancy.
5. Where one unit is added to an existing duplex, sprinklers are required in the new unit and not in the existing units where all of the following conditions are met:
   5.1. The existing duplex does not comply with the requirements for building height and story count for a Group R-2 occupancy;
   5.2. The project is considered a *substantial alteration* only because of the change in occupancy;
   5.3. The new unit is constructed as an *addition* to the duplex;
   5.4. The new unit is separated from the existing duplex by a fire wall; and
   5.5. The *addition* by itself complies with the requirements for a Group R-2 occupancy.

[S] 1104.1.1 Fire walls. An existing nonconforming building to which an *addition* is made is permitted to exceed the height, number of stories and area specified for new buildings if a fire wall is provided, the existing building is not made more nonconforming, and the *addition* conforms to this code.

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CHAPTER 12

HISTORIC BUILDINGS

Note: Chapter 12 is not adopted in The City of Seattle. See Section 310 for provisions for landmark buildings.

CHAPTER 13

PERFORMANCE COMPLIANCE METHODS

User note:

About this chapter: *Chapter 13 allows for existing buildings to be evaluated so as to show that alterations, while not meeting new construction requirements, will improve the current existing situation. Provisions are based on a numerical scoring system involving 19 various safety parameters and the degree of code compliance for each issue.*

SECTION 1301
GENERAL

[S] 1301.1 Scope. The provisions of this chapter shall apply to the *alteration*, *addition* and *change of occupancy* of *existing structures*, ((~~including historic structures,~~)) as referenced in Section 301.3.3. The provisions of this chapter are intended to maintain or increase the current degree of public safety, health and general welfare in *existing buildings* and structures while permitting ((~~,~~)) *alteration*, *addition* and *change of occupancy* without requiring full compliance with Chapters 6 through ((~~12~~)) 11, except where compliance with the prescriptive method of Chapter 5 or the work area method of other provisions of this code is specifically required in this chapter. *Alterations*, *additions* and *changes of occupancy* shall also comply with Chapter 3.

1301.1.1 Compliance with other methods. *Alterations*, *additions* and *changes of occupancy* to *existing structures* shall comply with the provisions of this chapter or with one of the methods provided in Section 301.3.

[S] 1301.2 Applicability. *Existing buildings* in which there is work involving *additions*, *alterations* or *changes of occupancy* shall be made to conform to the requirements of this chapter or the provisions of Chapters 6 through ((~~12~~)) 11. The provisions of Sections 1301.2.1 through 1301.2.6 shall apply to existing occupancies that will continue to be, or are proposed to be, in Groups A, B, E, F, I-2, M, R and S. These provisions shall also apply to Group U occupancies where such occupancies are undergoing a *change of occupancy* or a partial change in occupancy with separations in accordance with Section 1301.2.2. These provisions shall not apply to buildings with occupancies in Group H, I-1, I-3 or I-4.

1301.2.1 Change in occupancy. Where an *existing building* is changed to a new occupancy classification and this section is applicable, the provisions of this section for the new occupancy shall be used to determine compliance with this code.

[S] 1301.2.2 Partial change in occupancy. Where a portion of the building is changed to a new occupancy classification and that portion is separated from the remainder of the building with fire barrier or horizontal assemblies having a fire-resistance rating as required by Table 508.4 of the *International Building Code* ((~~or Section R302 of the *International Residential Code*~~)) for the separate occupancies, or with *approved* compliance alternatives, the portion changed shall be made to conform to the provisions of this section. Only the portion separated shall be required to be evaluated for compliance.

Where a portion of the building is changed to a new occupancy classification and that portion is not separated from the remainder of the building with fire barriers or horizontal assemblies having a fire-resistance rating as required by Table 508.4 of the *International Building Code* ((~~or Section R302 of the *International Residential Code*~~)) for the separate occupancies, or with *approved* compliance alternatives, the provisions of this section which apply to each occupancy shall apply to the entire building. Where there are conflicting provisions, those requirements which secure the greater public safety shall apply to the entire building or structure.

[S] 1301.2.3 Additions. *Additions* to *existing buildings* shall comply with the requirements of the *International Building Code* ((~~or the *International Residential Code*~~)) for new construction. The combined height and area of the *existing building* and the new *addition* shall not exceed the height and area allowed by Chapter 5 of the *International Building Code*. Where a fire wall that complies with Section 706 of the *International Building Code* is provided between the *addition* and the *existing building*, the *addition* shall be considered a separate building.

1301.2.4 Alterations. An *existing building* or portion thereof shall not be altered in such a manner that results in the building being less safe or sanitary than such building is currently.

Exception: Where the current level of safety or sanitation is proposed to be reduced, the portion altered shall conform to the requirements of the *International Building Code*.

1301.2.5 Escalators. Where escalators are provided in below-grade transportation stations, existing and new escalators shall be permitted to have a clear width of less than 32 inches (815 mm).

[S] 1301.2.6 Plumbing fixtures. Plumbing fixtures shall be provided in accordance with Section 1009 for a change of occupancy and Section 808 for *alterations*. Plumbing fixtures for *additions* shall be in accordance with the ((~~*International*~~)) *Seattle Plumbing Code* and Chapter 29 of the *Seattle Building Code*.

PERFORMANCE COMPLIANCE METHODS

[S] 1301.3 Acceptance. For ((~~*repairs,*~~)) *alterations*, *additions* and *changes of occupancy* to *existing buildings* that are evaluated in accordance with this section, compliance with this section shall be accepted by the *code official*.

[S] 1301.3.1 Hazards. Where the *code official* determines that an *unsafe* condition exists as provided for in Section ((~~115~~)) 101.14, such *unsafe* condition shall be abated in accordance with Section ((~~115~~)) 101.14.

[S] 1301.3.2 Compliance with other codes. Buildings that are evaluated in accordance with this section shall comply with ((~~the *International Fire Code* and *International Property Maintenance Code*~~)) Chapter 3.

* **1301.4 Investigation and evaluation.** For proposed work covered by this chapter, the building owner shall cause the *existing building* to be investigated and evaluated in accordance with the provisions of Sections 1301.4 through 1301.9.

[S][BS] 1301.4.1 Structural. ((~~analysis.~~ ~~The owner shall have a structural analysis of the *existing building* made to determine adequacy of structural systems for the proposed *alteration*, *addition* or *change of occupancy*. The analysis shall demonstrate that the building with the work completed is capable of resisting the loads specified in Chapter 16 of the *International Building Code*.~~)) *Alterations*, *additions* and *changes of occupancy* to *existing structures* shall comply with Section 304.

1301.4.2 Submittal. The results of the investigation and evaluation as required in Section 1301.4, along with proposed compliance alternatives, shall be submitted to the *code official*.

1301.4.3 Determination of compliance. The *code official* shall determine whether the *existing building*, with the proposed *addition*, *alteration* or *change of occupancy*, complies with the provisions of this section in accordance with the evaluation process in Sections 1301.5 through 1301.9.

1301.5 Evaluation. The evaluation shall be composed of three categories: fire safety, means of egress and general safety, as defined in Sections 1301.5.1 through 1301.5.3.

1301.5.1 Fire safety. Included within the fire safety category are the structural fire resistance, automatic fire detection, fire alarm, automatic sprinkler system and fire suppression system features of the *facility*.

1301.5.2 Means of egress. Included within the means of egress category are the configuration, characteristics and support features for means of egress in the *facility*.

1301.5.3 General safety. Included within the general safety category are the fire safety parameters and the means of egress parameters.

1301.6 Evaluation process. The evaluation process specified herein shall be followed in its entirety to evaluate *existing buildings* in Groups A, B, E, F, M, R, S and U. For *existing buildings* in Group I-2, the evaluation process specified herein shall be followed and applied to each and every individual smoke compartment. Table 1301.7 shall be utilized for tabulating the results of the evaluation. References to other sections of this code or other codes indicate that compliance with those sections is required in order to gain credit in the evaluation herein outlined. In applying this section to a building with mixed occupancies, where the separation between the mixed occupancies does not qualify for any category indicated in Section 1301.6.16, the score for each occupancy shall be determined, and the lower score determined for each section of the evaluation process shall apply to the entire building or to each smoke compartment for Group I-2 occupancies.

Where the separation between the mixed occupancies qualifies for any category indicated in Section 1301.6.16, the score for each occupancy shall apply to each portion or smoke compartment of the building based on the occupancy of the space.

1301.6.1 Building height and number of stories. The value for building height and number of stories shall be the lesser value determined by the formula in Section 1301.6.1.1. Section 504 of the *International Building Code* shall be used to determine the allowable height and number of stories of the building. Subtract the actual building height from the allowable height and divide by 12-1/2 feet (3810 mm). Enter the height value and its sign (positive or negative) in Table 1301.7 under Safety Parameter 1301.6.1, Building Height, for fire safety, means of egress and general safety. The maximum score for a building shall be 10.

1301.6.1.1 Height formula. The following formulas shall be used in computing the building height value.

$$\text{Height value, feet} = \frac{(AH) - (EBH)}{12.5} \times CF \qquad \textbf{(Equation 13-1)}$$

$$\text{Height value, stories} = (AS - EBS) \times CF \qquad \textbf{(Equation 13-2)}$$

where:

AH = Allowable height in feet (mm) from Section 504 of the *International Building Code*.
EBH = *Existing building* height in feet (mm).
AS = Allowable height in stories from Section 504 of the *International Building Code*.
EBS = *Existing building* height in stories.

communications system controls, fire department communication system controls, and any other controls specified in Section 911 of the *International Building Code* where those systems are provided.

1301.6.10 Smoke control. Evaluate the ability of a natural or mechanical venting, exhaust or pressurization system to control the movement of smoke from a fire. Under the categories and occupancies in Table 1301.6.10, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.10, Smoke Control, for means of egress and general safety.

TABLE 1301.6.10
SMOKE CONTROL VALUES

OCCUPANCY	CATEGORIES					
	a	b	c	d	e	f
A-1, A-2, A-3	0	1	2	3	6	6
A-4, E	0	0	0	1	3	5
B, M, R	0	2[a]	3[a]	3[a]	3[a]	4[a]
F, S	0	2[a]	2[a]	3[a]	3[a]	3[a]
I-2	-4	0	0	0	3	0

a. This value shall be 0 if compliance with Category d or e in Section 1301.6.8.1 has not been obtained.

[S] 1301.6.10.1 Categories. The categories for smoke control are:

1. Category a—None.
2. Category b—The building is equipped throughout with an automatic sprinkler system. Openings are provided in exterior walls at the rate of 20 square feet (1.86 m^2) per 50 linear feet (15 240 mm) of exterior wall in each story and distributed around the building perimeter at intervals not exceeding 50 feet (15 240 mm). Such openings shall be readily openable from the inside without a key or separate tool and shall be provided with ready access thereto. In lieu of operable openings, clearly and permanently marked tempered glass panels shall be used.
3. Category c—One enclosed exit stairway, with ready access thereto, from each occupied floor of the building. The stairway has operable exterior windows, and the building has openings in accordance with Category b.
4. Category d—One ((~~smokeproof enclosure~~)) pressurized stairway and the building has openings in accordance with Category b.
5. Category e—The building is equipped throughout with an automatic sprinkler system. Each floor area is provided with a mechanical air-handling system designed to accomplish smoke containment. Return and exhaust air shall be moved directly to the outside without recirculation to other floor areas of the building under fire conditions. The system shall exhaust not less than six air changes per hour from the floor area. Supply air by mechanical means to the floor area is not required. Containment of smoke shall be considered as confining smoke to the floor area involved without migration to other floor areas. Any other tested and *approved* design that will adequately accomplish smoke containment is permitted.
6. Category f—Each stairway shall be one of the following: a ((~~smokeproof enclosure~~)) pressurized stairway in accordance with Section 1023.12 of the *International Building Code*; pressurized in accordance with Section 909.20.5 or 909.20.6 of the *International Building Code*; or shall have operable exterior windows.

1301.6.11 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 the following sections of the *International Building Code*: 1003.7, 1004, 1005, 1006, 1007, 1016.2, 1026.1, 1028.3, 1028.5, 1030.2, 1030.3, 1030.4 and 1031. 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 504.

Under the categories and occupancies in Table 1301.6.11, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.11, Means of Egress Capacity, for means of egress and general safety.

TABLE 1301.6.11
MEANS OF EGRESS VALUES

OCCUPANCY	CATEGORIES				
	a[a]	b	c	d	e
A-1, A-2, A-3, A-4, E, I-2	-10	0	2	8	10
M	-3	0	1	2	4
B, F, S	-1	0	0	0	0
R	-3	0	0	0	0

a. The values indicated are for buildings six stories or less in height. For buildings over six stories above grade plane, add an additional -10 points.

[S] 1301.6.11.1 Categories. The categories for means-of-egress capacity and number of exits are:

1. Category a—Compliance with the minimum required means-of-egress capacity or number of exits is achieved through the use of a fire escape in accordance with Section ((~~405~~)) 504.
2. Category b—Capacity of the means of egress complies with Section 1005 of the *International Building Code*, and the number of exits complies with the minimum number required by Section 1006 of the *International Building Code*.
3. Category c—Capacity of the means of egress is equal to or exceeds 125 percent of the required means-of-egress capacity, the means of egress complies with the minimum required width dimensions specified in the *International Building Code*, and the number of exits complies with the minimum number required by Section 1006 of the *International Building Code*.
4. Category d—The number of exits provided exceeds the number of exits required by Section 1006 of the *International Building Code*. Exits shall be located a distance apart from each other equal to not less than that specified in Section 1007 of the *International Building Code*.
5. Category e—The area being evaluated meets both Categories c and d.

1301.6.12 Dead ends. In spaces required to be served by more than one means of egress, evaluate the length of the exit access travel path in which the building occupants are confined to a single path of travel. Under the categories and occupancies in Table 1301.6.12, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.12, Dead Ends, for means of egress and general safety.

TABLE 1301.6.12
DEAD-END VALUES

OCCUPANCY	CATEGORIES[a]			
	a	b	c	d
A-1, A-3, A-4, B, F, M, R, S	-2	0	2	-4
A-2, E	-2	0	2	-4
I-2	-2	0	2	-6

a. For dead-end distances between categories, the dead-end value shall be obtained by linear interpolation.

1301.6.12.1 Categories. The categories for dead ends are:

1. Category a—Dead end of 35 feet (10 670 mm) in nonsprinklered buildings or 70 feet (21 340 mm) in sprinklered buildings.
2. Category b—Dead end of 20 feet (6096 mm); or 50 feet (15 240 mm) in Group B in accordance with Section 1020.5, Exception 2, of the *International Building Code*.
3. Category c—No dead ends; or ratio of length to width (l/w) is less than 2.5:1.
4. Category d—Dead ends exceeding Category a.

1301.6.13 Maximum exit access travel distance to an exit. Evaluate the length of exit access travel to an *approved* exit. Determine the appropriate points in accordance with the following equation and enter that value into Table 1301.7 under Safety Parameter 1301.6.13, Maximum Exit Access Travel Distance for means of egress and general safety. The maximum allowable exit access travel distance shall be determined in accordance with Section 1017.1 of the *International Building Code*.

$$\text{Points} = 20 \times \frac{\text{Maximum allowable travel distance} - \text{Maximum actual travel distance}}{\text{Maximum allowable travel distance}} \qquad \textbf{(Equation 13-7)}$$

1301.6.14 Elevator control. Evaluate the passenger elevator equipment and controls that are available to the fire department to reach all occupied floors. Emergency recall and in-car operation of elevators shall be provided in accordance with the *International Fire Code*. Under the categories and occupancies in Table 1301.6.14, determine the appropriate value and enter that value into Table 1301.7 under Safety Parameter 1301.6.14, Elevator Control, for fire safety, means of egress and general safety. The values shall be zero for a single-story building.

CHAPTER 14

RELOCATED OR MOVED BUILDINGS

Note: Chapter 14 is not adopted in The City of Seattle. See Section 313 for provisions applying to relocated buildings and structures.

CHAPTER 15

CONSTRUCTION SAFEGUARDS

User note:

About this chapter: *Chapter 15 looks to the construction process. Parameters are provided for demolition and for protecting adjacent property during demolition and construction. Issues such as how to provide egress and adequate water supply while the building is growing, the timing of standpipe and sprinkler installation, and protection of pedestrians are addressed. Note that this chapter is consistent with Chapter 33 of the* International Building Code *and Chapter 33 of the* International Fire Code*.*

SECTION 1501
GENERAL

[BG] 1501.1 Scope. The provisions of this chapter shall govern safety during construction and the protection of adjacent public and private properties.

[BG] 1501.2 Storage and placement. Construction equipment and materials shall be stored and placed so as not to endanger the public, the workers or adjoining property for the duration of the construction project.

[BG] 1501.3 Alterations, repairs and additions. Required exits, existing structural elements, fire protection devices and sanitary safeguards shall be maintained at all times during *alterations*, *repairs* or *additions* to any building or structure. *

Exceptions:

1. Where such required elements or devices are being altered or repaired, adequate substitute provisions shall be made.
2. Maintenance of such elements and devices is not required where the *existing building* is not occupied.

[BG] 1501.4 Manner of removal. Waste materials shall be removed in a manner that prevents injury or damage to persons, adjoining properties and public rights-of-way.

[BG] 1501.5 Fire safety during construction. Fire safety during construction shall comply with the applicable requirements of the *International Building Code* and the applicable provisions of Chapter 33 of the *International Fire Code*.

[S][BS] 1501.6 Protection of pedestrians. ((~~Pedestrians shall be protected during construction and demolition activities as required by Sections 1501.6.1 through 1501.6.7 and Table 1501.6. Signs shall be provided to direct pedestrian traffic.~~)) The protection of the public and of the sidewalks, streets and other public property during construction or demolition shall be provided as required by the Street Use Ordinance, Seattle Municipal Code Title 15.

~~**[S] ([BS] TABLE 1501.6**~~
~~**PROTECTION OF PEDESTRIANS**~~

~~HEIGHT OF CONSTRUCTION~~	~~DISTANCE OF CONSTRUCTION TO LOT LINE~~	~~TYPE OF PROTECTION REQUIRED~~
~~8 feet or less~~	~~Less than 5 feet~~	~~Construction railings~~
	~~5 feet or more~~	~~None~~
~~More than 8 feet~~	~~Less than 5 feet~~	~~Barrier and covered walkway~~
	~~5 feet or more, but not more than one-fourth the height of construction~~	~~Barrier and covered walkway~~
	~~5 feet or more, but between one-fourth and one-half the height of construction~~	~~Barrier~~
	~~5 feet or more, but exceeding one-half the height of construction~~	~~None~~

~~For SI: 1 foot = 304.8 mm.~~))

~~**[S] ([BS] 1501.6.1 Walkways.** A walkway shall be provided for pedestrian travel in front of every construction and demolition site unless the applicable governing authority authorizes the sidewalk to be fenced or closed. A walkway shall be provided for pedestrian travel that leads from a building entrance or exit of an occupied structure to a public way. Walkways shall be of sufficient width to accommodate the pedestrian traffic, but shall be not less than 4 feet (1219 mm) in width. Walkways shall be provided with a durable walking surface and shall be accessible in accordance with Chapter 11 of the *International Building Code*. Walkways shall be designed to support all imposed loads and the design live load shall be not less than 150 pounds per square foot (psf) (7.2 kN/m^2).~~))

CONSTRUCTION SAFEGUARDS

[S] ((~~[BS] 1501.6.2 Directional barricades.~~ ~~Pedestrian traffic shall be protected by a directional barricade where the walkway extends into the street. The directional barricade shall be of sufficient size and construction to direct vehicular traffic away from the pedestrian path.~~))

[S] ((~~[BS] 1501.6.3 Construction railings.~~ ~~Construction railings shall be not less than 42 inches (1067 mm) in height and shall be sufficient to direct pedestrians around construction areas.~~))

[S] ((~~[BS] 1501.6.4 Barriers.~~ ~~Barriers shall be not less than 8 feet (2438 mm) in height and shall be placed on the side of the walkway nearest the construction. Barriers shall extend the entire length of the construction site. Openings in such barriers shall be protected by doors that are normally kept closed.~~

~~**[BS] 1501.6.4.1 Barrier design.** Barriers shall be designed to resist loads required in Chapter 16 of the *International Building Code* unless constructed as follows:~~

1. ~~Barriers shall be provided with 2-inch by 4-inch (51 mm by 102 mm) top and bottom plates.~~
2. ~~The barrier material shall be boards not less than 3/4 inch (19.1 mm) in thickness or wood structural use panels not less than 1/4 inch (6.4 mm) in thickness.~~
3. ~~Wood structural use panels shall be bonded with an adhesive identical to that for exterior wood structural use panels.~~
4. ~~Wood structural use panels 1/4 inch (6.4 mm) or 15/16 inch (23.8 mm) in thickness shall have studs spaced not more than 2 feet (610 mm) on center.~~
5. ~~Wood structural use panels 3/8 inch (9.5 mm) or 1/2 inch (12.7 mm) in thickness shall have studs spaced not more than 4 feet (1219 mm) on center, provided that a 2 inch by 4 inch (51 mm by 102 mm) stiffener is placed horizontally at mid-height where the stud spacing is greater than 2 feet (610 mm) on center.~~
6. ~~Wood structural use panels 5/8 inch (15.9 mm) or thicker shall not span over 8 feet (2438 mm).~~))

[S] ((~~[BS] 1501.6.5 Covered walkways.~~ ~~Covered walkways shall have a clear height of not less than 8 feet (2438 mm) as measured from the floor surface to the canopy overhead. Adequate lighting shall be provided at all times. Covered walkways shall be designed to support all imposed loads. The design live load shall be not less than 150 psf (7.2 kN/m^2) for the entire structure.~~

~~**Exception:** Roofs and supporting structures of covered walkways for new, light-frame construction not exceeding two stories above grade plane are permitted to be designed for a live load of 75 psf (3.6 kN/m^2) or the loads imposed on them, whichever is greater. In lieu of such designs, the roof and supporting structure of a covered walkway are permitted to be constructed as follows:~~

1. ~~Footings shall be continuous 2-inch by 6-inch (51 mm by 152 mm) members.~~
2. ~~Posts not less than 4 inches by 6 inches (102 mm by 152 mm) shall be provided on both sides of the roof and spaced not more than 12 feet (3658 mm) on center.~~
3. ~~Stringers not less than 4 inches by 12 inches (102 mm by 305 mm) shall be placed on edge on the posts.~~
4. ~~Joists resting on the stringers shall be not less than 2 inches by 8 inches (51 mm by 203 mm) and shall be spaced not more than 2 feet (610 mm) on center.~~
5. ~~The deck shall be planks not less than 2 inches (51 mm) thick or wood structural panels with an exterior exposure durability classification not less than 23/32 inch (18.3 mm) thick nailed to the joists.~~
6. ~~Each post shall be knee-braced to joists and stringers by members not less than 2 inches by 4 inches (51 mm by 102 mm); 4 feet (1219 mm) in length.~~
7. ~~A curb that is not less than 2 inches by 4 inches (51 mm by 102 mm) shall be set on edge along the outside edge of the deck.~~))

[S] ((~~[BS] 1501.6.6 Repair, maintenance and removal.~~ ~~Pedestrian protection required by Section 1501.6 shall be maintained in place and kept in good order for the entire length of time pedestrians are subject to being endangered. The owner or the owner's authorized agent, on completion of the construction activity, shall immediately remove walkways, debris and other obstructions and leave such public property in as good a condition as it was before such work was commenced.~~))

[S] ((~~[BS] 1501.6.7 Adjacent to excavations.~~ ~~Every excavation on a site located 5 feet (1524 mm) or less from the street lot line shall be enclosed with a barrier not less than 6 feet (1829 mm) in height. Where located more than 5 feet (1524 mm) from the street lot line, a barrier shall be erected where required by the *code official*. Barriers shall be of adequate strength to resist wind pressure as specified in Chapter 16 of the *International Building Code*.~~))

[W][BG] 1501.7 Facilities required. Sanitary facilities shall be provided during construction or demolition activities in accordance with the ((~~*International*~~)) <u>*Uniform*</u> *Plumbing Code*.

SECTION 1502
PROTECTION OF ADJOINING PROPERTY

[S][BS] 1502.1 Protection required. Adjoining public and private property shall be protected from damage during construction and demolition work. Protection must be provided for footings, foundations, party walls, chimneys, skylights and roofs. Provisions shall be made to control water runoff and erosion during construction or demolition activities. ((~~The person making or causing an excavation to be made shall provide written notice to the owners of adjoining buildings advising them that the excavation is to be made and that the adjoining buildings should be protected. Said notification shall be delivered not less than 10 days prior to the scheduled starting date of the excavation.~~)) When the existing grade of a site is altered by filling, excavating, dredging or moving of earth materials, the owner shall protect all adjoining property during construction from encroachment or collapse by sloping the sides of the temporary grading at a slope that is safe and not more than one horizontal to one vertical. In addition, adjoining property shall be protected from encroachment or collapse by sloping the sides of the permanent grading at a slope not greater than two horizontal to one vertical. The *code official* is authorized to approve temporary or permanent slopes that are steeper based on a design by an experienced geotechnical engineer.

In areas of known unsuitable soils, the *code official* is authorized to require slopes that are less steep to assure protection of adjoining property.

[S] ((~~[BS] 1502.2 Excavation retention systems.~~ ~~Where a retention system is used to provide support of an excavation for protection of adjacent structures, the system shall conform to the requirements in Section 1502.2.1 through 1502.2.3.~~

~~[BS] 1502.2.1 Excavation retention system design.~~ ~~Excavation retention systems shall be designed by a *registered design professional* to provide vertical and lateral support.~~

~~[BS] 1502.2.2 Excavation retention system monitoring.~~ ~~The retention system design shall include requirements for monitoring of the system and adjacent structures for horizontal and vertical movement.~~

~~[BS] 1502.2.3 Retention system removal.~~ ~~Elements of the system shall only be removed or decommissioned where adequate replacement support is provided by backfill or by the new structure. Removal or decommissioning shall be performed in such a manner that protects the adjacent property.~~))

SECTION 1503
TEMPORARY USE OF STREETS, ALLEYS AND PUBLIC PROPERTY

[S] ((~~[BG] 1503.1 Storage and handling of materials.~~ ~~The temporary use of streets or public property for the storage or handling of materials or equipment required for construction or demolition, and the protection provided to the public shall comply with the provisions of the applicable governing authority and this chapter.~~))

[S] 1503.1 General. Temporary use of streets, alleys and public property shall comply with the Street Use Ordinance, Seattle Municipal Code Title 15.

[S] ((~~[BG] 1503.2 Obstructions.~~ ~~Construction materials and equipment shall not be placed or stored so as to obstruct access to fire hydrants, standpipes, fire or police alarm boxes, catch basins or manholes, nor shall such material or equipment be located within 20 feet (6096 mm) of a street intersection, or placed so as to obstruct normal observations of traffic signals or to hinder the use of public transit loading platforms.~~))

[S] ((~~[BG] 1503.3 Utility fixtures.~~ ~~Building materials, fences, sheds or any obstruction of any kind shall not be placed so as to obstruct free approach to any fire hydrant, fire department connection, utility pole, manhole, fire alarm box or catch basin, or so as to interfere with the passage of water in the gutter. Protection against damage shall be provided to such utility fixtures during the progress of the work, but sight of them shall not be obstructed.~~))

SECTION 1504
FIRE EXTINGUISHERS

[F] 1504.1 Where required. Structures under construction, *alteration* or demolition shall be provided with not fewer than one *approved* portable fire extinguisher in accordance with Section 906 of the *International Fire Code* and sized for not less than ordinary hazard as follows:

1. At each stairway on all floor levels where combustible materials have accumulated.
2. In every storage and construction shed.
3. Additional portable fire extinguishers shall be provided where special hazards exist, such as the storage and use of flammable and combustible liquids.

[F] 1504.2 Fire hazards. The provisions of this code and of the *International Fire Code* shall be strictly observed to safeguard against all fire hazards attendant upon construction operations.

SECTION 1505
MEANS OF EGRESS

[BE] 1505.1 Stairways required. Where building construction exceeds 40 feet (12 192 mm) in height above the lowest level of fire department vehicle access, a temporary or permanent stairway shall be provided. As construction progresses, such stairway shall be extended to within one floor of the highest point of construction having secured decking or flooring.

[F] 1505.2 Maintenance of means of egress. Means of egress and required accessible means of egress shall be maintained at all times during construction, demolition, remodeling or *alterations* and *additions* to any building.

Exception: Existing means of egress need not be maintained where *approved* temporary means of egress and accessible means of egress systems and facilities are provided.

SECTION 1506
STANDPIPES

[F] 1506.1 Where required. In buildings required to have standpipes by Section 905.3.1 of the *International Building Code*, not less than one standpipe shall be provided for use during construction. Such standpipes shall be installed prior to construction exceeding 40 feet (12 192 mm) in height above the lowest level of fire department vehicle access. Such standpipes shall be provided with fire department hose connections at locations adjacent to *stairways*, complying with Section 1505.1. As construction progresses, such standpipes shall be extended to within one floor of the highest point of construction having secured decking or flooring.

[F] 1506.2 Buildings being demolished. Where a building or portion of a building is being demolished and a standpipe is existing within such a building, such standpipe shall be maintained in an operable condition so as to be available for use by the fire department. Such standpipe shall be demolished with the building but shall not be demolished more than one floor below the floor being demolished.

[F] 1506.3 Detailed requirements. Standpipes shall be installed in accordance with the provisions of Chapter 9 of the *International Building Code*.

Exception: Standpipes shall be either temporary or permanent in nature, and with or without a water supply, provided that such standpipes conform to the requirements of Section 905 of the *International Building Code* as to capacity, outlets and materials.

SECTION 1507
AUTOMATIC SPRINKLER SYSTEM

[S][F] 1507.1 Completion before occupancy. In buildings where an automatic sprinkler system is required by this code or the *International Building Code*, it shall be unlawful to occupy any portions of a building or structure until the automatic sprinkler system installation has been tested and *approved*, ((~~except as provided in Section 110.3~~)) unless approved by the *code official*.

[F] 1507.2 Operation of valves. Operation of sprinkler control valves shall be permitted only by properly authorized personnel and shall be accompanied by notification of duly designated parties. When the sprinkler protection is being regularly turned off and on to facilitate connection of newly completed segments, the sprinkler control valves shall be checked at the end of each work period to ascertain that protection is in service.

SECTION 1508
ACCESSIBILITY

[BE] 1508.1 Construction sites. Structures, sites and equipment directly associated with the actual process of construction, including, but not limited to, scaffolding, bridging, material hoists, material storage or construction trailers, are not required to be accessible.

SECTION 1509
WATER SUPPLY FOR FIRE PROTECTION

[F] 1509.1 When required. An *approved* water supply for fire protection, either temporary or permanent, shall be made available as soon as combustible building material arrives on the site, on commencement of vertical combustible construction, and on installation of a standpipe system in buildings under construction, in accordance with Sections 1509.1 through 1509.5.

Exception: The fire code official is authorized to reduce the fire-flow requirements for isolated buildings or a group of buildings in rural areas or small communities where the development of full fire-flow requirements is impractical.

[F] 1509.2 Combustible building materials. When combustible building materials of the building under construction are delivered to a site, a minimum fire flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used to provide this fire flow supply shall be within 500 feet (152 m) of the combustible building materials as measured along an *approved* fire apparatus access lane. Where the site configuration is such that one fire hydrant cannot be located within 500 feet (152 m) of all combustible building materials, additional fire hydrants shall be required to provide coverage in accordance with this section.

[F] 1509.3 Vertical construction of Types III, IV and V construction. Prior to commencement of vertical construction of Type III, IV or V buildings that utilize any combustible building materials, the fire flow required by Sections 1509.3.1 through 1509.3.3 shall be provided, accompanied by fire hydrants in sufficient quantity to deliver the required fire flow and proper coverage.

[F] 1509.3.1 Fire separation up to 30 feet. Where a building of Type III, IV or V construction has a fire separation distance of less than 30 feet (9144 mm) from property lot lines, and an adjacent property has an *existing structure* or otherwise can be built on, the water supply shall provide either a minimum of 500 gallons per minute (1893 L/m), or the entire fire flow required for the building when constructed, whichever is greater.

[F] 1509.3.2 Fire separation of 30 feet up to 60 feet. Where a building of Type III, IV or V construction has a fire separation distance of 30 feet (9144 mm) up to 60 feet (18 288 mm) from property lot lines, and an adjacent property has an *existing structure* or otherwise can be constructed upon, the water supply shall provide a minimum of 500 gallons per minute (1893 L/m), or 50 percent of the fire flow required for the building when constructed, whichever is greater.

[F] 1509.3.3 Fire separation of 60 feet or greater. Where a building of Type III, IV or V construction has a fire separation of 60 feet (18 288 mm) or greater from a property lot line, a water supply of 500 gallons per minute (1893 L/m) shall be provided.

[F] 1509.4 Vertical construction, Types I and II construction. If combustible construction materials are delivered to the construction site, water supply in accordance with Section 1509.2 shall be provided. Additional water supply for fire flow is not required prior to commencing vertical construction of Type I and II buildings.

[F] 1509.5 Standpipe supply. Regardless of the presence of combustible building materials, the construction type or the fire separation distance, where a standpipe is required in accordance with Section 1506, a water supply providing a minimum flow of 500 gallons per minute (1893 L/m) shall be provided. The fire hydrant used for this water supply shall be located within 100 feet (30 480 mm) of the fire department connection supplying the standpipe.

[S] SECTION 1510
DEMOLITION

1510.1 Construction documents. Construction documents and a schedule for demolition shall be submitted where required by the *code official*. Where such information is required, no work shall be done until such construction documents or schedule, or both, are approved.

1510.2 Pedestrian protection. The work of demolishing any building shall not be commenced until pedestrian protection is in place as required by this chapter and the Street Use Ordinance, Seattle Municipal Code Title 15.

1510.3 Means of egress. A horizontal exit shall not be destroyed unless and until a substitute means of egress has been provided and approved.

1510.4 Surface condition and fill. The site shall be left level and free of debris upon completion of demolition, and all holes shall be filled or protected with secure fences. Holes are permitted to be filled with concrete, rocks or other nondecaying material no larger than 12 inches (305 mm) in diameter. Wood and other organic material shall not be buried on the site. Leaving the site level means:

1. The grade conforms to that existing on all sides;
2. Surface water will drain off;
3. Surface is smooth; and
4. Broken sections of the foundation or other material are not exposed.

The site shall be seeded upon completion of the demolition if it is to be left vacant for more than 6 months.

1510.5 Water accumulation. Provision shall be made to prevent the accumulation of water or damage to any foundations on the premises or the adjoining property.

1510.6 Utility connections. Service utility connections shall be discontinued and capped in accordance with requirements of the governing utility or agency including, but not limited to, Seattle Public Utilities, Seattle Department of Transportation, Seattle Fire Department, Seattle City Light, Puget Sound Energy and Qwest Communications.

1510.7 Fire safety during demolition. Fire safety during demolition shall comply with the applicable requirements of this code and the applicable provisions of Chapter 33 of the *International Fire Code*.

1510.8 Removal of hazardous and combustible materials. All asbestos and other hazardous material shall be removed prior to demolition, in accordance with regulations of the Environmental Protection Agency, the Puget Sound Clean Air Agency and other pertinent agencies. Combustible waste shall be removed in accordance with the Fire Code. During demolition, streets and sidewalks shall be left clean at the end of each day's operation.

1510.9 Welding and cutting. Welding and cutting shall be performed in accordance with the *International Fire Code*.

1510.10 Erosion and sediment control. Provision shall be made to stabilize ground conditions to eliminate dust and erosion. Demolition sites shall comply with the Seattle Stormwater Code, Seattle Municipal Code (SMC) Title 22, Subtitle VIII, and the Seattle Grading Code, SMC Chapter 22.170.

1510.11 Drainage. If the demolition will result in a change of drainage patterns, the flow of all watercourses, including streams, ditches, drains, combined sewers and runoff, intercepted during the progress of the work, shall be returned to the condition present before the demolition or as specified on the permit, and in accordance with the Seattle Stormwater Code and Seattle Grading Code, SMC Title 22, Subtitle VIII, and SMC Chapter 22.170, respectively.

1510.12 Foundations and footings. All concrete or masonry floors, foundations, footings, basement walls and retaining walls not to be reused shall be removed to 18 inches (457 mm) below final grade. All concrete floors left in place shall be broken so as to allow water to drain through unless the floors are to be used.

1510.13 Engineer's report. The *code official* is permitted to require a structural engineer's analysis of proposed demolition or any portions of a structure remaining after demolition.

1510.14 Underground tanks. When demolition occurs, all underground tanks on the site shall either be removed or filled, as required by the *International Fire Code*.

[S] SECTION 1511
SITE WORK

1511.1 Excavation and fill. Excavation and fill for buildings and structures shall be constructed or protected so as not to endanger life or property. Stumps and roots shall be removed from the soil to a depth of not less than 12 inches (305 mm) below the surface of the ground in the area to be occupied by the building. Wood forms which have been used in placing concrete, if within the ground or between foundation sills and the ground, shall be removed before a building is occupied or used for any purpose. Before completion, loose or casual wood shall be removed from direct contact with the ground under the building.

1511.1.1 Slope limits. Slopes for permanent fill shall be not steeper than one unit vertical in two units horizontal (50-percent slope). Cut slopes for permanent excavations shall be not steeper than one unit vertical in two units horizontal (50-percent slope). Deviation from the foregoing limitations shall be permitted only upon the presentation of a soil investigation report acceptable to the *code official*.

1511.1.2 Surcharge. No fill or other surcharge loads shall be placed adjacent to any building or structure unless such building or structure is capable of withstanding the additional loads caused by the fill or surcharge. Existing footings or foundations which can be affected by any excavation shall be underpinned adequately or otherwise protected against settlement and shall be protected against later movement.

1511.1.3 Fill supporting foundations. Fill to be used to support the foundations of any building or structure shall comply with *International Building Code* Section 1804.5. Special inspections of compacted fill shall be in accordance with *International Building Code* Section 1705.6.

[S] SECTION 1512
CONSTRUCTION MATERIAL MANAGEMENT

1512.1 Storage and handling of materials. Materials stored and handled on site during construction shall comply with the manufacturer's printed instructions. Where manufacturer's printed instructions are not available, approved standards or guidelines shall be followed.

1512.2 Construction phase moisture control. Porous or fibrous materials and other materials subject to moisture damage shall be protected from moisture during construction. Material damaged by moisture or that is visibly colonized by fungi either prior to delivery or during construction shall be cleaned and dried or, where damage cannot be corrected by such means, shall be removed and replaced.

CHAPTER 16
REFERENCED STANDARDS

User note:

About this chapter: *This code contains numerous references to standards that are used to regulate materials and methods of construction. Chapter 16 contains a comprehensive list of all standards that are referenced in the code, including the appendices. The standards are part of the code to the extent of the reference to the standard. Compliance with the referenced standard is necessary for compliance with this code. By providing specifically adopted standards, the construction and installation requirements necessary for compliance with the code can be readily determined. The basis for code compliance is, therefore, established and available on an equal basis to the building code official, contractor, designer and owner.*

This chapter lists the standards that are referenced in various sections of this document. The standards are listed herein by the promulgating agency of the standard, the standard identification, the effective date and title, and the section or sections of this document that reference the standard. The application of the referenced standards shall be as specified in Section 102.4.

ACI

American Concrete Institute
38800 Country Club Drive
Farmington Hills, MI 48331-3439

562-21: Assessment, Repair, and Rehabilitation of Existing Concrete Structures
405.1.1

ASCE/SEI

American Society of Civil Engineers
Structural Engineering Institute
1801 Alexander Bell Drive
Reston, VA 20191-4400

7—1988: Minimum Design Loads and Associated Criteria for Buildings and Other Structures
((~~503.12, 706.3.2~~))

7—1993: Minimum Design Loads and Associated Criteria for Buildings and Other Structures
((~~503.12, 706.3.2~~))

7—1995: Minimum Design Loads and Associated Criteria for Buildings and Other Structures
((~~503.12, 706.3.2~~))

7—1998: Minimum Design Loads and Associated Criteria for Buildings and Other Structures
((~~503.12, 706.3.2~~))

7—2002: Minimum Design Loads and Associated Criteria for Buildings and Other Structures
((~~503.12, 706.3.2~~))

7—2005: Minimum Design Loads and Associated Criteria for Buildings and Other Structures
((~~503.12, 706.3.2~~))

7—2010: Minimum Design Loads and Associated Criteria for Buildings and Other Structures
((~~503.12, 706.3.2~~))

7—2016: Minimum Design Loads and Associated Criteria for Buildings and Other Structures with Supplement No. 1, Supplement No. 2, and Supplement No. 3
303.1.7, 304.2, 304.3.1, 503.4, 503.12, 503.13, 706.3.2, 801.3, 805.3, 805.4

41—2017: Seismic Evaluation and Retrofit of Existing Buildings
304.3.1, Table 304.3.1, 304.3.2, Table 304.3.2

ASHRAE

ASHRAE
1791 Tullie Circle NE
Atlanta, GA 30329

62.1—2019: Ventilation for Acceptable Indoor Air Quality
807.2

REFERENCED STANDARDS

ASME

American Society of Mechanical Engineers
Two Park Avenue
New York, NY 10016

A17.1—2019/CSA B44—19: Safety Code for Elevators and Escalators
306.7.7 ((~~, 902.1.2~~))

((~~A17.3—2020: Safety Code for Existing Elevators and Escalators~~
~~902.1.2~~))

A18.1—2020: Safety Standard for Platform Lifts and Stairway Chair Lifts
306.7.8

ASTM

ASTM International
100 Barr Harbor Drive, P.O. Box C700
West Conshohocken, PA 19428-2959

C94/C94M—17A: Specification for Ready-mixed Concrete
109.3.1

E108—17: Standard Test Methods for Fire Tests of Roof Coverings
1204.5

E136—16A: Test Method for Behavior of Materials in a Vertical Tube Furnace at 750°C
202

F2006—17: Standard Safety Specification for Window Fall Prevention Devices for Non-Emergency Escape (Egress) and Rescue (Ingress) Windows
505.2, 702.4

F2090—17: Standard Specification for Window Fall Prevention Devices with Emergency (Egress) Release Mechanisms
505.2, 505.3.1, 702.4, 702.5.1

ICC

International Code Council, Inc.
500 New Jersey Avenue NW 6th Floor
Washington, DC 20001

IBC—21: International Building Code®
101.4.1, 104.2.1, 106.2.2, 109.3.3, 109.3.6, 109.3.9, 109.3.10, 110.2, 202, 301.3, 302.4.1, 302.5, ((~~303.1~~)) 303.1.3, 303.1.3.1, 303.1.4, 303.1.7, 303.2.2, 303.3.1.1, 304.1, 304.3.1, 304.3.2, 305.1, 306.5, 306.7, 306.7.2, 306.7.4, 306.7.5, 306.7.9, 306.7.10, 306.7.10.1, 306.7.10.2, 306.7.10.3, 306.7.11, 306.7.12, 306.7.13, 306.7.15, 306.7.16, 306.7.16.3, 306.7.16.4, 306.7.16.5, 306.7.16.7, 308.1, 308.3, 309.2, 310.1, 401.3, 402.1, 405.2.1.1, 405.2.3.1, 405.2.3.3, 405.2.4, 405.2.5, 405.2.6, 501.2, 502.1, 502.3, ((~~502.4,~~)) 502.5, 503.1, 503.2, 503.3, 503.4, 503.5, 503.11, 503.12, 503.13, 503.14, 503.15, 503.17, 503.18, 505.3, 505.4, 506.1, 506.3, 506.4, 506.5.1, 506.5.2, 506.5.3, 506.5.4, 507.3, 701.2, ((~~701.3,~~)) 702.1, 702.2, 702.3, 702.5, 702.6, 702.7, 704.1.1, 704.3, ((~~705.1,~~)) 705.2, 706.2, 706.3.2, 802.2.1, 802.2.3, 802.3, 802.4, 802.5.2, 802.6, 802.6, 803.1.1, 803.2, 803.2.2, 803.2.3, 803.2.4, 803.2.5, 803.3, 804.1, 804.4.1, 804.4.1.1, Table 804.4.1.1(1), 804.4.1.2.1, 804.5.1.2, 804.5.3, 804.5.4, 804.5.5, 804.6, 804.7, 804.8.1, 804.9.1, 804.10.2, 804.11, 804.12.2, 805.2, 805.3, 805.4, 904.1.2, 904.1.3, 904.1.4, 904.1.6, 904.1.7, 904.2, 904.2.1, 904.2.2, 905.2, 905.3, 905.4, 906.2, 906.3, 906.6, 1001.2, 1001.3, 1002.1, 1002.2, 1002.3, 1002.4, 1004.1, 1006.1, 1006.2, 1006.3, 1006.4, 1010.1, 1011.1, 1011.2.1, 1011.2.2, 1011.3, 1011.5.1, 1011.5.2, 1011.5.3, 1011.5.6, 1011.6.1, 1011.6.1.1, 1011.6.3, 1011.7.1, 1011.7.2, 1011.7.3, 1011.8.1, 1011.8.2, 1011.8.3, 1102.1, 1102.2, 1102.3, ((~~1103.1,~~)) 1103.2, 1103.3, 1201.4, 1202.2, 1203.12, 1204.2, 1204.9, 1206.1, 1301.2.2, 1301.2.3, 1301.2.4, 1301.3.3, 1301.4.1, 1301.6.1, 1301.6.1.1, 1301.6.2, 1301.6.2.1, 1301.6.3.2, 1301.6.3.3, 1301.6.4.1, 1301.6.5, 1301.6.5.1, 1301.6.6, 1301.6.7.1, 1301.6.8, 1301.6.9, 1301.6.9.1, 1301.6.10, 1301.6.10.1, 1301.6.11, 1301.6.11.1, 1301.6.12.1, 1301.6.13, Table 1301.6.15, 1301.6.15.1, 1301.6.16.1, 1301.6.17, 1301.6.17.1, 1301.6.18, 1301.6.18.1, 1301.6.19, Table 1301.6.19, 1301.6.20, 1301.6.20.1, 1301.9.1, 1401.2, 1402.1, 1402.2, 1402.2.1, 1402.3, 1402.4, 1402.5, 1402.6, 1501.5, 1501.6.1, 1501.6.4.1, 1501.6.7, 1506.1, 1506.3, 1507.1

ICC 300—17: ICC Standard on Bleachers, Folding and Telescopic Seating and Grandstands
301.1.1

ICC—continued

ICC 500—20: Standard for the Design and Construction of Storm Shelters
303.1, 303.2

ICC A117.1—17: Accessible and Usable Buildings and Facilities
306.3, 306.7, 306.7.11, 306.7.12

IECC—21: International Energy Conservation Code®
302.2 ((~~, 702.7, 708.1, 809.1, 907.1, 1104.1~~))

IFC—21: International Fire Code®
101.2.1, 101.4.2, 301.3.1, 302.2, 307.1, 308.1, 502.3, 502.4, 802.2.1, 802.2.3, 803.2.3, 803.4.1.1, 803.4.1.2, 803.4.1.3, 803.4.1.4, 803.4.1.5, 803.4.1.6, 904.1.5, 1011.6.1.1, 1301.3.2, 1301.6.8.1, 1301.6.14, 1301.6.14.1, 1401.2, 1501.5, 1504.1, 1504.2

IFGC—21: International Fuel Gas Code®
302.2, 702.7.1

IMC—21: International Mechanical Code®
302.2, 702.7, 807.1, 902.1.1, 1008.1, 1301.6.7.1, 1301.6.8, 1301.6.8.1

IPC—21: International Plumbing Code®
302.2, 408.1, 702.7, 1009.1, 1009.2, 1009.3, 1009.5, 1501.7

IPMC—21: International Property Maintenance Code®
101.4.2, 302.2, 1301.3.2, 1401.2

IRC—21: International Residential Code®
101.2, 101.4.1, 104.2.1, 109.3.3, 109.3.10, 302.2, 307.1, 308.1, 310.1, 310.1.1, 401.3, 402.1, 405.2.6, ((~~502.3,~~)) 502.4, ((~~502.5,~~)) 503.2, 503.3, 503.11, 505.2, 505.3, 507.3, 701.3, 702.4, 702.5, 706.2, 708.1, 805.2, 806.4, 809.1, 906.2, 907.1, 1011.2.1, ((~~1103.1, 1103.2, 1103.3,~~)) 1104.1, 1201.4, 1301.2.2, 1301.2.3, 1301.3.3, 1401.2, 1402.1, 1402.2, 1402.2.1, 1402.3, 1402.4, 1402.5, 1402.6

NFPA

National Fire Protection Association
1 Batterymarch Park
Quincy, MA 02169-7471

NFPA 13R—19: Standard for the Installation of Sprinkler Systems in Residential Occupancies up to and Including Four Stories in Height
803.2.4

NFPA 70—20: National Electrical Code
107.3, 302.2, 406.1.1, 406.1.2, 406.1.3, 406.1.5, 806.1, 806.4.4, 1007.1, 1007.2, 1007.3, 1007.4

NFPA 72—19: National Fire Alarm and Signaling Code
803.2.6, 803.4

NFPA 99—21: Health Care Facilities Code
302.2.1, 406.1.4, 408.3, 501.3, 707.1, 806.3, 808.1, 1007.1

NFPA 101—21: Life Safety Code
804.2

UL

UL LLC
333 Pfingsten Road
Northbrook, IL 60062

790—04: Standard Test Methods for Fire Tests of Roof Coverings—with Revisions through October 2018
1204.5

[BS] COLLAR JOINT. The vertical space between adjacent wythes. A collar joint may contain mortar or grout.

[BS] CROSSWALL. A new or existing wall that meets the requirements of Section A111.3. A crosswall is not a shear wall.

[BS] CROSSWALL SHEAR CAPACITY. The unit shear value times the length of the crosswall, $v_c L_c$.

[BS] DETAILED BUILDING SYSTEM ELEMENTS. The localized elements and the interconnections of these elements that define the design of the building.

[BS] DIAPHRAGM EDGE. The intersection of the horizontal diaphragm and a shear wall.

[BS] DIAPHRAGM SHEAR CAPACITY. The unit shear value times the depth of the diaphragm, $v_u D$.

[BS] FLEXIBLE DIAPHRAGM. A diaphragm of wood or untopped metal deck construction in which the horizontal deformation along its length is at least two times the average story drift.

HEAD JOINT. The vertical mortar joint placed between masonry units within the wythe.

[BS] NORMAL WALL. A wall perpendicular to the direction of seismic forces.

[BS] OPEN FRONT. An exterior building wall line on one side only without vertical elements of the seismic force-resisting system in one or more stories.

[BS] POINTING. The process of removal of deteriorated mortar from between masonry units and placement of new mortar. Also known as repointing or tuckpointing for purposes of this chapter.

[BS] REPOINTING. See "*Pointing*."

[BS] RIGID DIAPHRAGM. A diaphragm of concrete construction or concrete-filled metal deck construction.

[BS] TUCKPOINTING. See "*Pointing*."

[BS] UNREINFORCED MASONRY (URM). Includes burned clay, concrete or sand-lime brick; hollow clay or concrete block; plain concrete; and hollow clay tile. These materials shall comply with the requirements of Section A106 as applicable.

[BS] UNREINFORCED MASONRY BEARING WALL. A URM wall that provides the vertical support for the reaction of floor or roof-framing members for which the total superimposed vertical load exceeds 100 pounds per linear foot (1459 N/m) of wall length.

[BS] UNREINFORCED MASONRY WALL. A masonry wall that relies on the tensile strength of masonry units, mortar and grout in resisting design loads, and in which the area of reinforcement is less than the minimum amounts as defined for reinforced masonry walls.

[BS] YIELD STORY DRIFT. The lateral displacement of one level relative to the level above or below at which yield stress is first developed in a frame member.

SECTION A104
SYMBOLS AND NOTATIONS

[S][BS] A104.1 Symbols and notations. For the purpose of this chapter, the following notations supplement the applicable symbols and notations in the building code.

a_n = Diameter of core multiplied by its length or the area of the side of a square prism.

A = Cross-sectional area of unreinforced masonry pier or wall, square inches (10^{-6} m^2).

A_b = Total area of the bed joints above and below the test specimen for each in-place shear test, square inches (10^{-6} m^2).

A_n = Area of net mortared or grouted section of a wall or wall pier.

D = In-plane width dimension of pier, inches (10^{-3} m), or depth of diaphragm, feet (m).

DCR = Demand-capacity ratio specified in Section A111.4.2.

f'_m = Lower bound masonry compressive strength.

f_{sp} = Tensile-splitting strength of masonry.

F_{wx} = Force applied to a wall at level x, pounds (N).

H = Least clear height of opening on either side of a pier, inches (10^{-3} m).

h/t = Height-to-thickness ratio of URM wall. Height, h, is measured between wall anchorage levels and/or slab-on-grade.

L = Span of diaphragm between shear walls, or span between shear wall and open front, feet (m).

L_c = Length of crosswall, feet (m).

L_i = Effective diaphragm span for an open-front building specified in Section A111.8, feet (m).

P = Applied force as determined by standard test method of ASTM C496 or ASTM E519, pounds (N).

P_D = Superimposed dead load at the location under consideration, pounds (N). For determination of the rocking shear capacity, dead load at the top of the pier under consideration shall be used.

P_{D+L} = Stress resulting from the dead plus actual live load in place at the time of testing, pounds per square inch (kPa).

P_{test} = Splitting tensile test load determined by standard test method ASTM C496, pounds (N).

P_w = Weight of wall, pounds (N).

R = Response modification factor for Ordinary plain masonry shear walls in Bearing Wall System from Table 12.2-1 of ASCE 7, where $R = 1.5$.

S_{DS} = Design spectral acceleration at short period, in g units.

S_{D1} = Design spectral acceleration at 1-second period, in g units.

v_a = The shear strength of any URM pier, v_mA/1.5 pounds (N).

v_c = Unit shear strength for a crosswall sheathed with any of the materials given in Table A108.1(1) or Table A108.1(2), pounds per foot (N/m).

v_{mL} = Shear strength of unreinforced masonry, pounds per square inch (kPa).

V_{aa} = The shear strength of any URM pier or wall, pounds (N).

V_{ca} = Total shear capacity of crosswalls in the direction of analysis immediately above the diaphragm level being investigated, v_cL_c, pounds (N).

V_{cb} = Total shear capacity of crosswalls in the direction of analysis immediately below the diaphragm level being investigated, v_cL_c, pounds (N).

V_p = Shear force assigned to a pier on the basis of its relative shear rigidity, pounds (N).

V_r = Pier rocking shear capacity of any URM wall or wall pier, pounds (N).

v_{test} = Load at incipient cracking for each in-place shear test performed in accordance with Section ((~~A106.2.3.6~~)) A106.2.3.2, pounds (N).

v_{tl} = Lower bound mortar shear strength, pounds per square inch (kPa).

v_{to} = Mortar shear test values as specified in Section A106.2.3.6, pounds per square inch (kPa).

v_u = Unit shear capacity value for a diaphragm sheathed with any of the materials given in Table A108.1(1) or A108.1(2), pounds per foot (N/m).

V_{wx} = Total shear force resisted by a shear wall at the level under consideration, pounds (N).

W = Total seismic dead load as defined in the building code, pounds (N).

W_d = Total dead load tributary to a diaphragm level, pounds (N).

W_w = Total dead load of a URM wall above the level under consideration or above an open-front building, pounds (N).

W_{wx} = Dead load of a URM wall assigned to level x halfway above and below the level under consideration, pounds (N).

Σv_uD = Sum of diaphragm shear capacities of both ends of the diaphragm, pounds (N).

$\Sigma\Sigma v_uD$ = For diaphragms coupled with crosswalls, v_uD includes the sum of shear capacities of both ends of diaphragms coupled at and above the level under consideration, pounds (N).

ΣW_d = Total dead load of all the diaphragms at and above the level under consideration, pounds (N).

SECTION A105
GENERAL REQUIREMENTS

[BS] A105.1 General. The seismic force-resisting system specified in this chapter shall comply with the *International Building Code* and referenced standards, except as modified herein.

[BS] A105.2 Alterations and repairs. *Alterations* and *repairs* required to meet the provisions of this chapter shall comply with applicable structural requirements of the building code unless specifically provided for in this chapter.

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

1. Dimensioned floor and roof plans showing existing walls and the size and spacing of floor and roof-framing members and sheathing materials. The plans shall indicate all existing URM walls, and new crosswalls and shear walls, and their materials of construction. The location of these walls and their openings shall be fully dimensioned and drawn to scale on the plans.

2. Dimensioned URM wall elevations showing openings, piers, wall classes as defined in Section A106.2.3.9, thickness, heights, wall shear test locations, cracks or damaged portions requiring *repairs*, the general condition of the mortar joints, and if and where pointing is required. Where the exterior face is veneer, the type of veneer, its thickness and its bonding and/or ties to the structural wall masonry shall be noted.
3. The type of interior wall and ceiling materials, and framing.
4. The extent and type of existing wall anchorage to floors and roof where used in the design.
5. The extent and type of parapet corrections that were previously performed, if any.
6. *Repair* details, if any, of cracked or damaged unreinforced masonry walls required to resist forces specified in this chapter.
7. All other plans, sections and details necessary to delineate required retrofit construction.
8. The design procedure used shall be stated on both the plans and the permit application.
9. Details of the anchor prequalification program required by Section A107.5.3, if used, including location and results of all tests.
10. Quality assurance requirements of special inspection for all new construction materials and for retrofit construction including: anchor tests, pointing or repointing of mortar joints, installation of adhesive or mechanical anchors, and other elements as deemed necessary to ensure compliance with this chapter.

[BS] A105.4 Structural observation, testing and inspection. Structural observation, in accordance with Section 1704.6 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 compliance with the *approved* construction documents and confirmation of existing conditions assumed during design.

Structural testing and inspection for new and existing construction materials shall be in accordance with the building code, except as modified by this chapter.

Special inspection as described in Section A105.3, Item 10, shall be provided equivalent to Level 3 as prescribed in TMS 402, Table 3.1(2).

SECTION A106
MATERIALS REQUIREMENTS

[BS] A106.1 Condition of existing materials. Existing materials used as part of the required vertical load-carrying or seismic force-resisting system shall be evaluated by on-site investigation and: determined to be in good condition (free of degraded mortar, degraded masonry units or significant cracking); or shall be repaired, enhanced, retrofitted or removed and replaced with new materials. Mortar joint deterioration shall be patched by pointing or repointing of the eroded joint in accordance with Section A106.2.3.10. Existing significant cracks in solid unit unreinforced and solid grouted hollow unit masonry shall be repaired.

[BS] A106.2 Existing unreinforced masonry.

[BS] A106.2.1 General. Unreinforced masonry walls used to support vertical loads or seismic forces parallel and perpendicular to the wall plane shall be tested as specified in this section. Masonry that does not meet the minimum requirements established by this chapter shall be repaired, enhanced, removed and replaced with new materials, or alternatively, shall have its structural functions replaced with new materials and shall be anchored to supporting elements.

[BS] A106.2.2 Lay-up of walls. Unreinforced masonry walls shall be laid in a running bond pattern.

[BS] A106.2.2.1 Header in multiple-wythe solid brick. The facing and backing wythes of multiple-wythe walls 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 wythes. The clear distance between adjacent header courses shall not exceed 24 inches (610 mm) vertically or horizontally. Where 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 for which the area and spacing conform to the foregoing. Wythes of walls not meeting these requirements shall be considered to be veneer, and shall not be included in the effective thickness used in calculating the height-to-thickness ratio and the shear capacity strength of the wall.

Exception: Where SD1 is 0.3 g or less, veneer wythes anchored and made composite with backup masonry are permitted to be used for calculation of the effective thickness.

[S][BS] A106.2.2.2 Lay-up patterns. Lay-up patterns other than those specified in Section A106.2.2.1 are allowed if their performance can be justified to the *code official*.

CHAPTER A2

EARTHQUAKE HAZARD REDUCTION IN EXISTING REINFORCED CONCRETE AND REINFORCED MASONRY WALL BUILDINGS WITH FLEXIBLE DIAPHRAGMS

Appendix A2 is not adopted by The City of Seattle.

CHAPTER A5

REFERENCED STANDARDS

SECTION A501
REFERENCED STANDARDS

A501.1 General. See Table A501.1 for standards that are referenced in various sections of this appendix. Standards are listed by the standard identification with the effective date, standard title, and the section or sections of this appendix that references the standard.

[S] TABLE A501.1
REFERENCED STANDARDS

STANDARD ACRONYM	STANDARD NAME	SECTIONS HEREIN REFERENCED
AISC 341-16	*Seismic Provisions for Structural Steel Buildings*	A403.10.1, A403.10.2
ASCE/SEI 7 —16	*Minimum Design Loads for Buildings and Other Structures with Supplement No. 1*	A104.1, A205.1, A206.1, A206.2, A206.3, A206.4, A206.7, A403.3
ASTM A36/A36M— 14	*Specification for Carbon Structural Steel*	A405.3.3
ASTM A653/A653M —15	*Standard Specification for Steel Sheet, Zinc Coated (Galvanized) or Zinc-Iron Alloy-Coated (Galvannealed) by Hot-Dip Process*	A304.2.6
ASTM B695 —04(2009)	*Standard Specification for Coating of Zinc Mechanically Deposited on Iron and Steel*	A304.2.6
ASTM C67- 14	*Test Methods of Sampling and Testing Brick and Structural Clay Tile*	A106.2.3.1
ASTM C140/C140M —15	*Standard Test Methods for Sampling and Testing Concrete Masonry Units and Related Units*	A106.2.3.1
ASTM C496 —96/C496M —11	*Standard Test Method for Splitting Tensile Strength of Cylindrical Concrete Specimens*	A104.1, A106.2.3.3
ASTM C1531—15	*Standard Test Methods for In Situ Measurement of Masonry Mortar Joint Shear Strength Index*	A106.2.3.2
ASTM E488/E488M —15	*Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements*	A107.5.1, A107.5.3
<u>ASTM E488—10</u>	<u>*Test Method for Strength of Anchors in Concrete and Masonry Elements*</u>	<u>A107.5</u>
ASTM E519/E519M —2010	*Standard Test Method for Diagonal Tension (Shear) in Masonry Assemblages*	A104.1<u>, A106.2.3.2</u>
IBC—00	*International Building Code*	A202.1
IBC—03	*International Building Code*	A202.1
IBC—06	*International Building Code*	A202.1
IBC—09	*International Building Code*	A202.1
IBC—12	*International Building Code*	A202.1
IBC—15	*International Building Code*	A202.1
IBC—18	*International Building Code*	A202.1
IBC—21	*International Building Code*	A102.2, A105.1, A105.4, A202.1, A203.1, A204.1, A205.1, A205.3, A205.3.1, A205.4, A301.3, A304.1.1, A403.1, A405.1, A407.1, A407.2, A407.3
UBC—97	*Uniform Building Code*	A202.1

[S] CHAPTER A6

ALTERNATE METHOD FOR THE SEISMIC IMPROVEMENT OF UNREINFORCED MASONRY (URM) BUILDINGS

SECTION A601
GENERAL

A601.1 Purpose. The purpose of this chapter is to establish an alternate method for the seismic retrofit of *URM buildings* with the goal of improving seismic life safety. This alternate method provides a minimally acceptable level of life safety risk from earthquakes that is a lesser level than the *substantial alteration* seismic regulations established in Section 311.1.2.

A601.2 General requirements. Where this Chapter A6 is used, the construction documents shall include a statement on the structural notes demonstrating that the building has been evaluated and/or retrofitted to comply with this Chapter A6.

SECTION A602
DEFINITIONS

The definitions in the SBC and SEBC shall apply in addition to the definitions of this chapter.

BED JOINT. The horizontal layer of mortar on which a masonry unit is laid.

CROSSWALL. A new or existing wood-framed wall(s) sheathed with any material with a cumulative length of at least 50 percent of the diaphragm depth between diaphragm chords. Individual walls shall have a maximum height-to-length ratio of 1.5 to be considered a crosswall. The minimum crosswall length may be reduced to 25% of the diaphragm depth if it can be shown that the crosswalls do not consist of unblocked gypsum wall board.

POINTING. The process of removal of deteriorated mortar from between masonry units and placement of new mortar. Also known as *repointing* or *tuckpointing* for purposes of this chapter.

REPOINTING. See "Pointing."

TUCKPOINTING. See "Pointing."

SECTION A603
QUALIFICATION CRITERIA

Buildings that demonstrate compliance with, or are altered to comply with, qualification criteria (1) through (7) of this section are permitted to be strengthened in compliance with Section A604.

(1) The building is no more than 6 stories above the seismic base of the structure.

(2) The building shall not be classified as Risk Category IV.

(3) The building does not have a Weak Story vertical irregularity as defined by ASCE 7-16 as referenced by the SBC.

(4) The building has a mortar shear strength, v_{to}, as determined by Section A604.2, of 30 psi or more for all masonry classes.

(5) The building has wood or plywood diaphragms at all levels above the base of the building.

(6) The building does not have straight sheathed floor or roof diaphragms.

Exceptions:

i. Straight sheathed floor diaphragms with finished wood flooring with offset or perpendicular board edges.

ii. Straight sheathed floor or roof diaphragms without finished wood flooring with offset or perpendicular board edges where any of the following conditions are met:

(1) The building has *crosswalls* below the non-compliant level at a spacing that does not exceed 40 feet on center; or

(2) The diaphragm span is less than 24 feet and the diaphragm aspect ratio is less than 2-to-1.

(7) The building has or will be provided with a minimum of two lines of vertical elements of the lateral force resisting system parallel to each axis located near or on the perimeter of the building. Where the lateral force resisting system is a masonry wall:

i. The piers shall have a height-to-width ratio that does not exceed 2-to-1.

ii. The piers shall occupy not less than 40 percent of the wall's length.

iii. The piers shall not be comprised of hollow clay block or hollow clay tile.

Lateral force resisting frames or walls added to provide a minimum of two lines of vertical elements of the lateral force resisting system shall comply with the seismic regulations for *Substantial Alterations* per the Seattle Existing Building Code.

Exception: Item seven qualification criteria for masonry walls do not apply if the applicant submits a report prepared by a licensed Structural Engineer that shows all walls comply with a maximum demand/capacity ratio of 2.5 for in-plane forces. One of the following two methods shall be used to determine the demand/capacity ratio:

i. ASCE 41 Chapter 16: Special Procedure for *Unreinforced Masonry* where seismic hazard is determined using Section A604.1 with $S_{XS} = S_{DS}$ and $S_{X1} = S_{D1}$; or

ii. Chapter A1 of the Seattle Existing Building Code where seismic hazard is determined using Section A604.1.

SECTION A604
SEISMIC IMPROVEMENT METHOD

Elements shall comply with, or be altered to comply with, the requirements listed in this section for wall anchorage (tension anchors), diaphragm shear transfer (shear anchors), out-of-plane wall bracing, and parapet/appendage bracing.

Structural testing and inspection for new and existing construction materials shall be in accordance with the building code, except as modified by this chapter. Where special inspections and tests are required in this chapter, they shall be performed by an *approved agency*. Evaluation of the condition of existing materials and testing results is the responsibility of the *structural engineer in responsible charge*.

A604.1 Seismic hazard. For application of this Seismic Improvement Method, spectral response acceleration parameters, S_{DS} and S_{D1}, shall be determined by using one of the following methods.

(1) Seventy-five percent of the values established in ASCE 7-16 as referenced by the 2021 Seattle Building Code; or

(2) Seventy-five percent of the values established in ASCE 7-22, and the Site class, as defined in ASCE 7-22, shall be determined by a qualified geotechnical engineer. In lieu of a geotechnical engineer determination, site class may be determined utilizing available Seattle Department of Construction and Inspections (SDCI) map, Director's Rule DR 2-2023 Update of Environmentally Critical Area (ECA) Liquefaction-Prone Areas Map, that defines Liquefaction Prone Areas (type ECA5). Where the project site is Type ECA5, site class E shall be used. Where the site is not ECA5, the default site class shall be used.

A604.2 Materials requirements.

A604.2.1 Unreinforced masonry classes. Existing *unreinforced masonry* shall be categorized into one or more classes based on shear strength, quality of construction, state of repair, deterioration, and weathering. Classes are defined for whole walls, not for small areas of masonry within a wall. Discretion in the definition of classes of masonry is permitted to avoid unnecessary testing.

A604.2.2 Condition of existing materials. Existing materials used as part of the required vertical load-carrying or seismic force-resisting system shall be evaluated by on-site investigation and determined to be in good condition (free of degraded mortar, degraded masonry units and/or significant cracking); or shall be repaired, enhanced, retrofitted or removed and replaced with new materials.

A604.2.2.1 Mortar joint deterioration shall be patched by *pointing* or *repointing* of the eroded joint in accordance with Section A604.2.3.3. Existing significant cracks in solid unit unreinforced and solid grouted hollow unit masonry shall be repaired.

A604.2.3 Testing of masonry. All *unreinforced masonry* (URM) walls used to carry vertical loads or resist seismic forces parallel and perpendicular to the wall plane shall be tested. The shear tests shall be taken at locations representative of the mortar conditions throughout the building. Test locations shall be determined by the design professional in charge. Results of all tests and their locations shall be recorded, and these results shall be submitted to the Code Official for approval as part of the structural analysis.

The minimum number of tests per masonry class shall be determined as follows:

(1) At each story, not less than one test per wall or line of wall elements providing a common line of resistance to seismic forces;

(2) Not less than one test per 1,500 ft^2 (140 m^2) of wall surface or not less than a total of eight tests.

Exception to (1) and (2): Required tests at all other stories besides the first and top stories may be reduced to one test per wall line per two stories with approval of the Code Official. Condition of masonry at skipped levels shall be similar to adjacent levels and tested results at adjacent levels shall show low variation in shear strength.

A604.2.3.1 In-place mortar tests. Mortar shear test values, v_{to}, shall be obtained by one of the following:

(1) ASTM C1531;

(2) Alternative methods of testing may be approved by the Code Official for masonry walls other than brick or where in-place testing is not practical because of crushing or other failure mode of the masonry.

A604.2.3.2 Minimum quality of mortar.

(1) Mortar shear test values, v_{to}, in pounds per square inch, shall be obtained for each in-place shear test in accordance with the following equation:

$$v_{to} = (V_{test}/A_b) - P_{(D+L)} \quad \textbf{(Equation A6-1)}$$

V_{test} = Load at first observed movement
A_b = Total area of the *bed joints* above and below the test specimen.
$P_{(D+L)}$ = Stress resulting from actual dead plus live loads in place at the time of testing.

(2) Individual *unreinforced masonry* walls with more than 50 percent of mortar test values, v_{to}, less than 30 pounds per square inch (207 kPa) shall be pointed prior to construction and retested.

(3) The lower bound mortar shear strength, v_{tL}, is defined as the mean minus one standard deviation of the mortar shear test values, v_{to}.

(4) *Unreinforced masonry* with mortar shear strength, v_{tL}, less than 30 pounds per square inch (207 kPa) shall be pointed and retested or shall have its structural function replaced, and shall be anchored to supporting elements of the building. When existing mortar in any wythe is pointed to increase its shear strength and is retested, the condition of the mortar in the adjacent *bed joints* of the inner wythe or wythes and the opposite outer wythe shall be examined for extent of deterioration. The shear strength of any wall class shall be not greater than that of the weakest wythe of that class.

A604.2.3.3 Pointing. Deteriorated mortar joints in *unreinforced masonry* walls shall be pointed in accordance with the following requirements:

(1) Joint Preparation. Deteriorated mortar shall be cut out by means of a toothing chisel or nonimpact power tool until sound mortar is reached, to a depth not less than 3/4 inch (19.1 mm) or twice the thickness of the joint, whichever is less, but not greater than 2 inches (50 mm). Care shall be taken not to damage the masonry edges. After cutting is complete, all loose material shall be removed with a brush, or air or water stream.

(2) Mortar Preparation. The mortar mix shall be proportioned as required by the construction specifications and manufacturer's approved instructions.

(3) Packing. The joint into which the mortar is to be packed shall be dampened but without freestanding water. The mortar shall be tightly packed into the joint in layers not exceeding 1/4 inch (6.4 mm) deep until it is filled; then it shall be tooled to a smooth surface to match the original profile.

Nothing shall prevent *pointing* of any masonry wall joints before testing is performed in accordance with Section A604.2.3.

Preparation and mortar *pointing* shall be performed with special inspection.

Exception: Incidental *pointing* may be performed without special inspection subject to the approval of the Code Official.

A604.3 Testing of anchors.

A604.3.1 Existing wall anchors. Existing wall anchors used as all or part of the required tension anchors shall be tested in pullout according to Section A604.3.3.1. Not fewer than four anchors tested per floor shall be tested in pullout, with not fewer than two tests at walls with joists framing into the wall and two tests at walls with joists parallel to the wall, but not less than 10 percent of the total number of existing tension anchors at each level.

Exception: Existing tension anchors that extend entirely through the wall and meet the criteria in Table 1 need not be tested.

A604.3.2 New wall anchors. New wall anchors embedded in URM walls resisting tension forces or a combination of tension and shear forces shall be subject to special inspection, prior to placement of the anchor and grout or adhesive in the drilled hole. Five percent of all anchors resisting tension forces shall be subject to a direct-tension test, and an additional 20 percent shall be tested using a calibrated torque wrench. Testing shall be performed in accordance with Section A604.3.3.

Exception: New bolts that extend through the wall with steel plates on the far side of the wall need not be tested.

A604.3.3 Tests of anchors in unreinforced masonry walls. Tests of anchors in *unreinforced masonry* walls shall be in accordance with Section A604.3.3.1 through A604.3.3.3. Results of all tests shall be reported to the authority having jurisdiction. The report shall include the test results of maximum load for each test; pass-fail results; corresponding anchor size

and type; orientation of loading; details of the anchor installation, testing apparatus and embedment; wall thickness; and joist orientation and proximity to the tested anchor.

A604.3.3.1 Direct tension testing of existing anchors and new anchors. The test apparatus shall be supported by the masonry wall. The test procedure for prequalification of tension anchors shall comply with ASTM E488. Existing wall anchors shall be given a preload of 300 pounds (1335 N) before establishing a datum for recording elongation. The tension test load shall be the lesser of the target test load or the load recorded at 1/8 inch (3.2 mm) relative movement between the existing anchor and the adjacent masonry surface. New embedded tension anchors shall be subject to a direct tension load of not less than 2.5 times the design load but not less than 1,500 pounds (6672 N) for five minutes.

Exception: Where obstructions occur, the distance between the anchor and the test apparatus support shall be not less than one-half the wall thickness for existing anchors and 75% of the embedment length for new embedded anchors.

A604.3.3.2 Torque testing of new anchors. Anchors embedded in *unreinforced masonry* walls shall be tested using a torque-calibrated wrench to the following minimum torques:

1/2-inch-diameter bolts: 40 foot pounds
5/8-inch-diameter bolts: 50 foot pounds
3/4-inch-diameter bolts: 60 foot pounds

A604.3.3.3 Prequalification tests for bolts and other types of anchors. ASTM E488 or the test procedure in Section A604.3.3.1 is permitted to be used to determine tension or shear strength values for anchors greater than those permitted by Table 2 or that deviate from required spacing, edge distances or embedment. Anchors shall be installed in the same manner and using the same materials as will be used in the actual construction. Not fewer than five tests for each bolt size and type shall be performed for each class of masonry in which they are proposed to be used. The tension and shear strength values for such anchors shall be the lesser of the average ultimate load divided by 5.0 or the average load at which 1/8 inch (3.2 mm) elongation occurs for each size and type of anchor and class of masonry.

A604.4 Design strengths.

(1) Strength values for existing materials are given in Table 1 and for new materials in conjunction with existing materials in Table 2.

(2) The strength reduction factor, Φ, shall be taken equal to 1.0.

(3) The use of materials not specified herein shall be based on substantiating research data or engineering judgment, as approved by the Code Official.

TABLE 1
STRENGTH VALUES FOR EXISTING MATERIALS

Existing Materials or Configuration of Materials[a]		Strength Values X 14.594 for N/m
Horizontal diaphragms	Roofs with straight sheathing and roofing applied directly to the sheathing.	300 lbs. per ft. for seismic shear
	Roofs with diagonal sheathing and roofing applied directly to the sheathing.	750 per ft. for seismic shear
	Floors with straight tongue-and-groove sheathing.	300 per ft. for seismic shear
	Floors with straight sheathing and finished wood flooring with board edges offset or perpendicular.	1,500 per ft. for seismic shear
	Floors with diagonal sheathing and finished wood flooring.	1,800 per ft. for seismic shear
	Metal deck welded with minimal welding.[b]	1,800 per ft. for seismic shear
	Metal deck welded for seismic resistance.[c]	3,000 per ft. for seismic shear
Tension anchors	Rosette-style anchors, 1/2-inch minimum diameter, extending entirely through *unreinforced masonry* wall with bearing plates on the far side of a wall 30 square inches of area.	5,400 lbs. per anchor for three-wythe minimum walls 2,700 lbs. for two-wythe walls

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm^2, 1 pound = 4.4 N, 1 pound per square inch = 6894.75 N/m^2, 1 pound per foot = 14.43 N/m.

a. Material must be sound and in good condition

b. Minimum 22-gage steel deck with welds to support satisfying the standards of the Steel Deck Institute.

c. Minimum 22-gage steel deck with 3/4-inch diameter plug welds at an average spacing not exceeding 8 inches and with sidelap welds appropriate for the deck span.

TABLE 2
STRENGTH VALUES OF NEW MATERIALS USED IN CONJUNCTION WITH EXISTING CONSTRUCTION

New Materials or Configuration of Materials		Strength Values
Tension anchors[e]	Anchors extending entirely through *unreinforced masonry* wall secured with bearing plates on far side of a wall 30 square inches of area.[b, c]	5,400 lbs. per anchor for three-wythe minimum walls. 2,700 lbs. for two-wythe walls.
Shear bolts[d, e]	Anchors embedded not less than 8 inches into *unreinforced masonry* walls; anchors should be centered in 2 1/2 inch diameter holes with dry-pack or non-shrink grout around the circumference of the anchor.	The value for plain masonry specified for solid masonry TMS 402; and no value larger than those given for 3/4 inch bolts should be used. Use f'm = 285psi or test for a higher value.
Combined tension and shear anchors[e]	Through-anchors: anchors meeting the requirements for shear and for tension anchors.[b, c]	Tension: same as for tension anchors. Shear: same as for shear anchors.
	Embedded anchors- anchors extending to the exterior face of the wall with a 2 1/2 inch round plate under the head and drilled at an angle of 22 1/2 degrees to the horizontal; installed as specified for shear anchors.[a, b, c]	Tension: 3,600 lbs. per anchor. Shear: same as for shear anchors.

For SI: 1 inch = 25.4 mm, 1 square inch = 645.16 mm^2, 1 pound = 4.4 N, 1 degree = 0.017 rad, 1 pound per foot = 14.43 N/m, 1 foot = 304.8 mm.

a. Embedded anchors to be tested as specified in Section A604.3.2.

b. Anchors shall be 1/2 inch minimum diameter.

c. Drilling for anchors shall be done with an electric rotary drill; impact tools should not be used for drilling holes or tightening anchors and shear bolt nuts.

d. Other bolt sizes, values and installation methods may be used, provided that a testing program is conducted in accordance with Section A604.3.3.3. The strength value shall be determined by multiplying the calculated allowable value, determined in accordance with Section A604.3.3.3, by 3.0, and the usable value shall be limited to not greater than 1.5 times the value given in the table. Bolt spacing shall not exceed 6 feet on center and shall be not less than 12 inches on center.

e. An alternative adhesive anchor bolt system is permitted to be used providing: its properties and installation conform to an ICC Evaluation Service Report; and the report states that the system's use is in *unreinforced masonry* as an acceptable alternative to Sections A604.3.2 and A604.5 or TMS 402, Section 2.1.4. The report's allowable values shall be multiplied by a factor of three to obtain strength values and the strength reduction factor, Φ, shall be taken equal to 1.0.

A604.5 Wall anchorage (tension bolts).

A604.5.1 General. *Unreinforced masonry* walls shall be anchored at the roof and floor levels for out-of-plane tension forces in accordance with Sections A604.5.2 and A604.5.3. Wall anchors shall be secured to the framing members parallel or perpendicular to the wall to develop the required forces in accordance with the Seattle Building Code.

A604.5.2 Wall anchorage forces. Anchorage of masonry walls to each floor or roof shall resist a minimum force determined as 0.9 S_{DS} times the tributary weight or 200 pounds per linear foot (2920 N/m), whichever is greater, acting normal to the wall at the level of the floor or roof.

S_{DS} = Design spectral acceleration at short period, in *g* units.

A604.5.3 Anchor spacing. Maximum anchor spacing is 6 feet (1829 mm) with a minimum of two anchors on walls 6 feet (1829 mm) or shorter in length.

A604.5.4 Anchors at corners. At the roof and floor levels, tension anchors shall be provided within 2 feet (610 mm) horizontally from the inside of the corners of the walls.

A604.6 Diaphragm shear transfer (shear bolts).

A604.6.1 Diaphragm shear transfer demand, V_d. Diaphragms shall be connected to *unreinforced masonry* wall elements with connections capable of developing the diaphragm- loading tributary to the wall elements given by the lesser of the following equations:

$$V_d = 1.2\, S_{D1}\, C_p\, W_d \qquad \textbf{(Equation A6-2)}$$

$$V_d = v_d D \qquad \textbf{(Equation A6-3)}$$

S_{D1} = Design spectral acceleration at 1-second period, in g units.

C_p = Horizontal Force Factor per Table 3

W_d = Total dead load tributary to the diaphragm along the wall under consideration, pounds (N).

v_d = Existing diaphragm shear strength determined per Table 1.

D = Depth of the diaphragm, feet (m).

TABLE 3
HORIZONTAL FORCE FACTOR, Cp

Configuration of Materials	C_p
Roofs with straight or diagonal sheathing and roofing applied directly to the sheathing, or floors with straight tongue-and-groove sheathing.	0.50
Diaphragms with double or multiple layers of boards with edges offset, and blocked plywood systems.	0.75
Diaphragms of metal deck without topping:	
Minimal welding or mechanical attachment	0.6
Welded or mechanically attached for seismic resistance	0.68

A604.6.2 Anchor requirements. Anchors transmitting shear forces shall have a maximum spacing of 6 feet (1829 mm) with a minimum of two anchors on walls 6 feet (1829 mm) or shorter in length, and they shall have nuts installed over malleable iron or plate washers where bearing on wood, and heavy-cut washers where bearing on steel. At the roof and floor levels, both shear anchors shall be provided within 2 feet (610 mm) horizontally from the inside of the corners of the walls.

A604.7 Out-of-plane wall bracing.

A604.7.1 General. Where an *unreinforced masonry* wall height-to-thickness ratio exceeds the limits of Table 4, the wall shall be laterally supported by vertical bracing members per Section A604.7.2 or by reducing the wall height by bracing per Section A604.7.3. Bracing members shall be connected to the horizontal floor and roof diaphragms per Section A604.7.4.

A604.7.2 Vertical bracing members. Vertical bracing members shall be attached to floor and roof construction for their design loads independently of required wall anchors. Horizontal spacing of vertical bracing members shall not exceed one-half of the unsupported height of the wall or 10 feet (3048 mm). Deflection of such bracing members at design loads shall not exceed one-tenth of the wall thickness. Design loads shall be determined by multiplying the weight of the wall by 0.4 S_{DS} and shall not be less than 10 percent of the wall weight. Spacing of anchors attaching to the vertical bracing member shall be as required by design, but shall not be less than 6 feet on center.

A604.7.3 Intermediate wall bracing. The wall height may be reduced by bracing elements connected to the floor or roof. Horizontal spacing of the bracing elements and wall anchors shall be as required by design, but shall not exceed 6 feet (1829 mm) on center. Bracing elements shall be detailed to minimize the horizontal displacement of the wall by the vertical displacement of the floor or roof. Design loads shall be determined by multiplying the weight of the wall by 0.4 S_{DS} and shall not be less than 10 percent of the wall weight.

A604.7.4 Bracing attachment. Bracing members shall be connected to the floor and roof diaphragms using blocking, nailing, or other means, in accordance with the Seattle Building Code. The brace connection to the diaphragm shall be capable of resisting a force of 0.9 S_{DS} times the weight of the wall tributary to the brace.

TABLE 4
ALLOWABLE VALUE OF HEIGHT-TO-THICKNESS RATIO OF UNREINFORCED MASONRY WALLS[a]

Wall Types	$0.13_g \le S_{D1} < 0.25_g$	$0.25_g \le S_{D1} < 0.4_g$	$S_{D1} \ge 0.4_g$ All other Buildings
Walls of one-story buildings	20	16	13
First-story wall of multiple story building	20	18	15
Walls in top story of multiple-story building	14	14	9
All other walls	20	16	13

For SI: 1 pound per square inch = 6894.75 N/m^2

a. Alternative height-to-thickness ratios are permitted to be considered, subject to approval by the Code Official.

A604.8 Parapets and appendage bracing.

A604.8.1 General. *Unreinforced masonry* parapets and exterior wall appendages not conforming to this chapter shall be removed, or stabilized or braced to ensure that the parapets and appendages remain in their original positions. Where a parapet is removed or altered, the resulting parapet shall be no less conforming to the provisions of the Seattle Building Code for fire protection than it was prior to the alteration.

The maximum height of an unbraced *unreinforced masonry* parapet above the lower of either the level of tension anchors or the roof sheathing shall not exceed the height-to-thickness ratio shown in Table 5. If the required parapet height exceeds this maximum height, a bracing system designed for the forces per Section A604.8.2 shall support the top of the parapet.

The height of a URM parapet above any wall anchor shall be not less than 12 inches (305 mm).

Exception: If a reinforced concrete beam is provided at the top of the wall, the height above the wall anchor is permitted to be not less than 6 inches (152 mm).

TABLE 5
MAXIMUM ALLOWABLE HEIGHT-TO-THICKNESS RATIO FOR PARAPETS

	S_{D1}		
	$0.13_g \le S_{D1} < 0.25_g$	$0.25_g \le S_{D1} < 0.4_g$	$S_{D1} \ge 0.4_g$
Maximum allowable height-to- thickness ratios	2.5	2.5	1.5

A604.8.2 Parapet bracing forces. Anchorage of parapet wall to the roof shall resist a minimum force determined as 0.48 S_{DS} times the tributary weight acting normal to the wall at the level of the floor or roof.

A604.8.3 Additional requirements. Where provided, parapet bracing shall be spaced at a maximum of 8 feet on center. Where the tension roof anchors are not adequate or non-existent, roof construction must be tied to the parapet per Section A604.5.

APPENDIX B

SUPPLEMENTARY ACCESSIBILITY REQUIREMENTS FOR EXISTING BUILDINGS AND FACILITIES

Appendix B is not adopted by The City of Seattle.

APPENDIX C: GUIDELINES FOR THE WIND RETROFIT OF EXISTING BUILDINGS

CHAPTER C1

GABLE END RETROFIT FOR HIGH-WIND AREAS

Appendix C1 is not adopted by The City of Seattle.

CHAPTER C2

ROOF DECK FASTENING FOR HIGH-WIND AREAS

Appendix C2 is not adopted by The City of Seattle.

CHAPTER C3

REFERENCED STANDARDS

Appendix C3 is not adopted by The City of Seattle.

APPENDIX D

BOARD OF APPEALS

Appendix D is not adopted by The City of Seattle.